Phase II Site Investigation

Colfax Mainstreet Coalition Assessment Grant

4017 West Colfax Avenue

EPA Cooperative Agreement No. BF96810701-0

EPA ACRES Property I.D. #170862

Perry II Brownfield Project

4017 West Colfax Avenue

Denver, Colorado

Revision 1

June 19, 2014

Terracon Project No. 25147007

Prepared for:
City and County of Denver, City of Lakewood
Denver Urban Renewal Authority

Prepared by:
Terracon Consultants, Inc.
Wheat Ridge, Colorado

June 19, 2014

City and County of Denver
Department of Environmental Health
200 West 14th Avenue, Department 310
Denver, Colorado 80204

Attn: Mr. Dave Wilmoth
P: 720.865.4538

Re: Phase II Site Investigation Report, Revision 1
Colfax Mainstreet Coalition Assessment Grant
Perry II Brownfield Project
4017 West Colfax Avenue
Denver, Colorado
Terracon Project Number: 25147007
EPA Cooperative Agreement No. BF96810701-0
EPA ACRES Property ID #170862

Dear Mr. Wilmoth:

Terracon Consultants, Inc. (Terracon) is pleased to submit our revised report for Phase II Site Investigation activities completed at the above referenced site. The report presents data from recent field activities that included the completion of a soil boring, installation of a groundwater monitoring well and a sub-slab soil vapor point, and the collection of soil, groundwater, and soil vapor samples for laboratory analysis. These services were provided in accordance with Terracon Proposal No. P25130869rev1.

The Colfax Mainstreet Coalition is a collaboration between the Cities of Denver and Lakewood, and the Denver Urban Renewal Authority (DURA), funded with U. S. Environmental Protection Agency, (EPA) Region 8 Brownfields Hazardous Substances and Petroleum Assessment Coalition Cooperative Agreement BF96810701-0. DURA is the primary coalition Cooperative Agreement Recipient (CAR). Services were conducted as part of Task 3 of the Cooperative Agreement Work Plan negotiated between the client and EPA[1].

[1] *Colfax Mainstreet Project Work Plan and Budget, August 31, 2012.*

Terracon appreciates this opportunity to provide environmental engineering services to the City and County of Denver. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

Sarah Bruns
Environmental Scientist

John C. Dellaport, P.E., P.G., CHMM
Project Manager

Daniel F. Schneider, P.E., CHMM
Program Manager

Attachment

SEB/JCD/dek3/DFS

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PHASE II SITE INVESTIGATION, Revision 1
COLFAX MAINSTREET COALITION ASSESSMENT GRANT
PERRY II BROWNFIELD PROJECT
EPA COOPERATIVE AGREEMENT NO. BF96810701-0
EPA ACRES PROPERTY I.D. #170862
4017 WEST COLFAX AVENUE
DENVER, DENVER COUNTY, COLORADO

Terracon Project No. 25147007
June 19, 2014

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) has completed the Phase II Site Investigation activities at the property located at 4017 West Colfax Avenue as described in our proposal dated January 15, 2014 (Proposal Number P25130869rev1). Authorization to proceed with the assessment activities was provided by Mr. Dave Wilmoth with the City and County of Denver (CCoD). This Phase II Site Investigation was completed with funding from the Colfax Mainstreet Coalition Brownfields Assessment Grant (CFDA No. 66.818).

Site Name	4017 West Colfax Avenue (the site)
Site Location/Address	4017 West Colfax Avenue, Denver, Denver County, Colorado
General Site Description	The site consists of an approximately 2,500 square foot parcel of commercial land. An approximate 893 square-foot commercial building is located on the site.

The developer (Enviro Finance Group [EFG]) plans to convert this under-utilized property to commercial/residential use. The proposed redevelopment for the site will be achieved through the consolidation by acquisition of the adjacent properties (1511 Perry Street and 4035 West Colfax Avenue) totaling approximately 1 acre. The assembled properties would be redeveloped with the construction of a five- to eight-story mixed-use building to accommodate approximately 100 units of affordable senior housing and 8,500 square feet of ground floor medical office space. A Site Location Map depicts the site location and is included as Exhibit 1 in Appendix A.

The site building was constructed in 1954 and today is used for retail sales of cellular phone devices. The exterior of the site includes asphalt-paved parking areas. Additional information concerning historical uses of the site is provided in Terracon's Sampling and Analysis Plan (SAP), Revision 1, dated April 29, 2014 (Terracon 2014a) and the Phase I Environmental Site Assessment completed by Smith Environmental & Engineering (Smith 2014).

The scope of services provided under this contract with CCoD included the following:

- Health and Safety Plan (HASP) Preparation;
- Sampling and Analysis Plan (SAP) Development; and,
- Phase II Site Investigation to include:
  - Asbestos-Containing Materials (ACM) Pre-Demolition and Regulated Building Materials (RBM) Surveys; and,
  - Soil, Groundwater, and Soil Vapor Sampling.

Smith completed the ACM and RBM surveys for this site. This report was submitted to CCoD on May 30, 2014 under separate cover.

The following summarizes the Phase II site investigation portion of the total contracted scope of services. The purpose of this investigation was to evaluate for the potential presence of volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) in site soil, potential VOCs in site groundwater, and potential VOCs in site soil vapor resulting from current and historical activities both on and/or off-site. The current and historical activities on- and off-site were evaluated by Smith in their Phase I ESA for the site. The Phase I ESA did not identify on-site recognized environmental conditions (RECs), but identified the following off-site RECs:

- Former Pig-N-Whistle (Eddie Bohn's Texaco) – 4801 W. Colfax Ave., Denver, CO - The former Pig-N-Whistle site is located approximately 0.469 miles to the west of the Subject Property. The Colorado Department of Labor and Employment (CDLE), Division of Oil and Public Safety (OPS) records indicate that groundwater contaminants have migrated off site and that the former Pig-N-Whistle site is currently undergoing remedial efforts. This constitutes a REC to the Subject Property because the former Pig-N-Whistle site is located hydraulically upgradient of the Subject Property.
- Forty Hi (Currently Infinite Auto, Inc.) – 4035 W. Colfax Ave., Denver, CO – The site is approximately 0.01 miles west of the Subject Property. Conditions indicative of a release or material threat to the environment exist at this site. This constitutes a REC to the Subject Property because the 4035 W. Colfax Ave. site is located hydraulically upgradient to the Subject Property.
- Foster Auto Body Co – 4040 W. Colfax Ave., Denver, CO – The 4040 W. Colfax Ave. site is located approximately 0.011 miles to the south-southeast of the Subject Property. Conditions indicative of a release or material threat to the environment exist at this site. This constitutes a REC to the Subject Property because the 4040 W. Colfax Ave. site is located hydraulically upgradient from the Subject Property.
- Robinson Service Center – 4000 W. Colfax Ave., Denver, CO – The 4000 W. Colfax Ave. site is located 0.021 miles to the east-southeast of the Subject

Property. Conditions indicative of a release or material threat to the environment exist at this site. This constitutes a REC to the Subject Property because the 4000 W. Colfax Ave. site is located hydraulically upgradient of the Subject Property.

- Un-named – (former Pacheco's Carpet Cleaning) 1516 Perry St., Denver, CO – Records indicate that site was utilized as a carpet cleaner facility in 2007. The 1516 Perry St. site is located approximately 0.034 mi to the northeast of the Subject Property. Due to local groundwater flow data discrepancies, this site is assumed to be located hydraulically upgradient from the Subject Property. Due to historical conditions indicative of a release or material threat to the environment exist at this site, this site constitutes a REC because this site is assumed to be located upgradient to the Subject Property.

- Tri Way Coin Wash - 3937 W. Colfax Ave., Denver, CO – Records indicate that the 3937 W. Colfax site was utilized as a self-serve laundry facility from 1961 to 1986. This site is located approximately 0.057 mi to the east of the Subject Property. Due to local groundwater flow data discrepancies, this site is assumed to be located upgradient from the Subject Property. Due to historical conditions indicative of a release or material threat to the environment exist at this site, this site constitutes a REC because this site is assumed to be located upgradient to the Subject Property.

- The site adjacent to the west of the Subject Property (4017 W. Colfax Ave.) at 4035 W. Colfax Avenue has historically been utilized as a service station and automotive repair business beginning as early as 1938. Several other sites in the vicinity of the Subject Property to the southeast, west, and southwest have historically been utilized as service stations, automotive repair shops and automotive sales businesses. These adjacent sites, which are assumed to be hydraulically upgradient from the Subject Property due to inconclusive groundwater flow direction data are listed below:
  - 4035 W. Colfax Ave.
  - 3940 W. Colfax Ave.
  - 4040 W. Colfax Ave.
  - 4101 W. Colfax Ave.
  - 4200 W. Colfax Ave.
  - 4215 W. Colfax Ave.

  The presence of these historically operated service stations and automotive repair shops immediately adjacent to and hydraulically upgradient from the Subject Property constitutes a REC.

Smith's Phase I ESA identified potential sources of a vapor encroachment condition in close proximity to the site, and recommended that a subsurface investigation be conducted to evaluate vapor intrusion potential (Smith 2014).

This Phase II investigation evaluates potential impacts to soil, groundwater, and soil vapor associated with the aforementioned off-site RECs. The sampling and analysis methodology, data quality objectives, and quality assurance/quality control procedures are discussed in the site-specific SAP prepared for the Perry II Brownfield Project. On April 29, 2014, the Perry II SAP (Revision 1) (Terracon 2014a) was approved by EPA and CCoD.

1.1 Brownfields Setting

As stated in Client's proposal to EPA for competitive award of coalition assessment funding, this property underwent the selection process described therein. This property is identified as the Perry II Brownfield Project in the Coalition Brownfield Project Inventory. This property is identified in EPA's online Assessment, Cleanup and Redevelopment Exchange System (ACRES) as number 170862. Services for this property use both hazardous substance and petroleum funding.

1.2 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These Phase II services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11, *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment.*

1.3 Additional Scope Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this Phase II investigation. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

1.4 Reliance

This report has been prepared for the exclusive use of the CCoD, West Denver Investments, and EFG-South Sloan's Lake II LLC. Any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of CCoD and Terracon. Any unauthorized distribution or reuse is at the CCoD's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, this report, and Terracon's Agreement for Services. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to CCoD and all relying parties unless otherwise agreed in writing.

2.0 PHASE II SITE INVESTIGATION

The Phase II Site Investigation scope of services was comprised of five tasks:

1. SAP/HASP Development and Utility Clearances;
2. Soil Boring and Groundwater Sampling;
3. Soil Vapor Sampling;
4. Sample Analyses; and,
5. Report Preparation.

2.1 Plan Development

A site-specific SAP and HASP were prepared for sampling activities to be conducted at the site. The SAP established assessment activities and field sampling locations for the site and was used in conjunction with the Quality Assurance Project Plan (QAPP), Revision 4, for the Colfax Mainstreet Coalition – Brownfields Coalition Assessment, CFDA No. 66.818 (November 8, 2013). A HASP was prepared to perform the field work under U.S. Environmental Protection Agency (EPA) Level D personal protective equipment.

Terracon ordered sample kits from TestAmerica and ESC Laboratories (ESC) to include laboratory sample containers for collection of the soil, groundwater, and soil vapor samples and a trip blank.

2.2 Soil Borings

Terracon subcontracted DrillPro Services, Inc. (DrillPro) to advance the soil boring and construct the temporary groundwater monitoring well. Terracon provided an environmental scientist to oversee the hollow-stem auger (HSA) drilling, log the soil boring, design and oversee monitoring well construction and collect field samples.

On May 12, 2014, DrillPro mobilized to the site with a Dietrich 120 hollow-stem auger (HSA) drill rig. The rig was used for split-barrel soil sampling and construction of a 2.0-inch diameter temporary monitoring well.

One soil boring (P2-SB01) was advanced to a depth of 25 feet below ground surface (bgs). During drilling, 24-inch long soil cores were collected at approximate 5-foot sampling intervals. Between sampling intervals, soil cuttings were observed continuously during augering for changes in color, moisture and texture. Terracon classified the soils for type, color, grain size, and other soil characteristics. The soil boring log representing the observed and interpolated stratification boundaries of the site soils is presented in Appendix B. Soil samples were collected and observed to document Unified Soil Classification System (USCS) group symbol, particle size range, plasticity, hardness, moisture content, color and any indications of potential environmental impact.

After reaching total drilling depth, boring P2-SB01 was completed as groundwater monitoring well P2-MW01 as described in Section 2.4. The soil boring/groundwater monitoring well location is illustrated on Exhibit 2 (Appendix A).

Two drums of drill cuttings and decontamination solids (investigation-derived waste [IDW]) were generated and stored in labeled 55-gallon drums and are managed as described in Section 2.8.

2.2.1 Physical Setting

The site is located in a mixed-use commercial and residential area. The site is developed with a single-story building and an asphalt-paved parking area west of the site building. The site is bound to the north by a basketball court, to the east by Yeshiva Torres Chaim Dormitory, to the south by West Colfax Avenue, and to the west by Infinite Auto, Inc.

2.2.2 Site Geology and Hydrogeology

The site is located at an approximate elevation of 5,320 feet above mean sea level. The topography of the site and surrounding area is predominantly flat and slopes slightly towards the east-northeast (Exhibit 1, Appendix A).

Based on the lithology observed during site investigation activities by Terracon, the P2-SB01 boring location was underlain by pieces concrete and brick fill from the surface to approximately one feet bgs. A dry, brown/gray clay was observed from approximately one to 15 feet bgs. Weathered claystone was encountered at approximately 15.5 feet bgs to the terminal depth of the boring. The observed soil stratigraphy and USCS group symbols are provided on the soil boring log in Appendix B. Groundwater was not encountered during advancement of the boring P2-SB01.

On May 21, 2014, a round of static groundwater level measurements was collected from monitoring wells on the Perry I site (PS-SB01 through PS-SB05), Perry II site (P2-MW01) and Perry III site (P3-MW01 through P3-MW05) (See Table 1, Appendix D). Static groundwater

level elevations ranged from 82.70 feet (P3-MW03) to 95.71 (P3-MW02) above an arbitrary site datum (southeast corner of the Boost Mobile building at 4017 West Colfax Avenue = 100.00 feet).

A potentiometric surface map was developed from groundwater elevations observed in Perry I, II and III monitoring wells on May 21, 2014 (Exhibit 3, Appendix A). The potentiometric surface map excludes water level data from P3-MW02 (anomalous groundwater high) and P3-MW03 (anomalous groundwater low). The contour map of the remaining water level data indicates a west-to-east groundwater flow direction beneath the Perry II and Perry III sites. This local flow direction is consistent with the regional west-to-east flow direction indicated on a regional water table map of the Denver metropolitan area (USGS 1996). Local groundwater flow directions may vary seasonally and annually based on precipitation patterns and other hydrogeologic influences.

2.2.3 ATH Field Screening Results

Terracon's environmental scientist collected unsaturated soil samples from borings for field screening by the Ambient Temperature Headspace (ATH) method. A representative sample from each split-barrel sample was placed into individual labeled sealable plastic bags. The bags were sealed and the contents were allowed to equilibrate to the surrounding ambient temperature. Terracon used a Mini-Rae photoionization detector (PID) with a 10.6 electron-volt ultraviolet lamp to sample the headspace in the bag for the potential presence of VOC vapors. Prior to use, the PID was calibrated to a 100 parts per million (ppm) isobutylene standard in accordance with the manufacturer's specifications. After the equilibration period, the PID tip was inserted into the bag headspace and the PID response recorded on the soil boring log in ppm (Appendix B).

PID readings ranging from 0.0 to 1,044 ppm were detected in the soil from boring P2-SB01. The highest PID reading of 1,044 ppm was observed between 10 and 12 feet bgs. The observation of elevated PID responses indicated a potential soil impact in the soil boring. The laboratory soil sample (P2-SB01-1012) was collected from boring P2-SB01 between 10 and 12 feet bgs. The field screening results are reported in ppm on the soil boring log in Appendix B.

2.3 Soil Sample Collection and Analyses

Upon removal of the soil core from the sampler, a portion of the soil core was placed into labeled soil jars for potential laboratory analysis. Soil samples collected for laboratory analysis were selected from the zone most likely to exhibit environmental impairment based on field observations, PID response, or visual indications of potential environmental impact.

On May 12, 2014, one soil sample (P2-SB01-1012) was collected for laboratory analysis. Quality control soil sample P2-SBReplicate was collected as a replicate of soil sample P2-SB01-1012. Replicate results are summarized in Table 5a and are discussed in Section 4.1.1.

On May 12, 2014, the soil sample and sample replicate were labeled and placed into an iced cooler. The samples were hand-delivered under chain-of custody procedures to TestAmerica in Arvada, Colorado for analysis of VOCs by EPA Method 8260B, TPH by EPA Method 8015B, and polycyclic aromatic hydrocarbons (PAH) by EPA Method 8270C SIM. VOC, TPH, and PAH soil analytical results are included in Appendix D1.

2.4 Groundwater Monitoring Well Installation, Development, and Surveying

Soil boring P2-SB01 was completed as groundwater monitoring well P2-MW01. The monitoring well depth was 25 feet bgs. The well was constructed with a 15 foot length of 2.0-inch diameter polyvinyl chloride (PVC) well screen. A clean, silica sand filter pack was placed from the bottom of the well to approximately one to two feet above the top of well screen, followed by a hydrated bentonite chip annular seal to approximately ½ foot bgs. The monitoring well was fitted with a J-plug well cap and bolt-down, flush-mounted well cover. Monitoring well construction details are provided on the soil boring log in Appendix B. The monitoring well does not have to be permitted with the Colorado Division of Water Resources (DWR), provided that it is abandoned in accordance with Colorado Water Well Construction Rules within one year of construction.

On May 14, 2014, a Terracon environmental scientist visited the site to develop the monitoring well, and collect a groundwater sample for laboratory analysis. Depth to groundwater was 16.14 feet below top of monitoring well casing (TOC) in P2-MW01. The monitoring well was developed by surging and purging the well with a single-use PVC bailer in accordance with the QAPP SOP 10 – *Monitor Well Development.* The monitoring well was immediately sampled after development as described in Section 2.5. Purged groundwater was stored in a labeled drum on-site and will be profiled for disposal as discussed in Section 2.8. The completed well development form is included in Appendix B.

On May 21, 2014, the TOCs and ground surface elevations were surveyed in accordance with Terracon SOP E.1800 Physical Field Measurements. For this project, Terracon used a level, tripod and rod to establish the vertical positions of ground surface and TOC between P2-MW01 and the groundwater monitoring wells drilled during the Perry I and Perry III site investigations. The horizontal position of each monitoring well was field-located using a measuring tape and/or a measuring wheel from at least two known fixed points (i.e., buildings) on the site. Groundwater level measurements and survey data are provided in Table 1 (Appendix C).

2.5 Groundwater Sample Collection and Analyses

On May 14, 2014, immediately following well development, groundwater sample (P2-MW01) was collected from monitoring well P2-MW01 using a single-use PVC bailer. The well was considered adequately purged when the relative change in pH and conductivity were less than 10% of the previous reading. Immediately following collection of sample P2-MW01, a sample replicate (P2-MWReplicate) was collected from well P2-MW01 using the same bailer. The groundwater sample (P2-MW01), replicate sample (P2-MWReplicate), rinsate sample (P2-

RINSATE) and a trip blank were hand-delivered to TestAmerica for analysis of VOCs (EPA Method 8260B). Laboratory results are included in Appendix D2.

2.6 Soil Vapor Sampling

Terracon's soil vapor sampling activities were conducted on May 15, 2014. The sub-slab soil vapor sampling point SS-01 was installed inside the site building in the vault room. The sub-slab sampling point was installed in accordance with the SAP, *Appendix C1 – Soil Gas Investigation Guidance Document (August 2013)* and as summarized below. The approximate location of the sub-slab soil vapor sample is depicted on Exhibit 2 included in Appendix A.

One sub-slab soil vapor sampling point (SS-01) was installed through the concrete inside of the site building. The sampling point was installed by using a handheld rotary hammer drill to advance a 1.0-inch diameter hole through the concrete foundation and slightly into the underlying soil. The sampling point was constructed of a 2-inch long by 1/8-inch diameter stainless steel pin with a self-sealing silicon sleeve.

Environmental Science Corporation Lab Sciences (ESC) of Mount Juliet, Tennessee provided two laboratory-certified, pre-evacuated 1-liter Summa® sampling canisters and two laboratory-certified, pre-evacuated TO-15 SIM bottles. The canister was connected to sampling pin P2-SS01 with dedicated Tygon® sample tubing and a soil vapor sample P2-SS01(0.5) was collected as described in Terracon's Soil Gas Investigation Guidance Document. Immediately after collecting soil vapor sample P2-SS01(0.5), quality control soil vapor sample P2-SSReplicate was collected. After collecting the quality control soil vapor sample, sampling point P2-SS01 was abandoned by removing the pin and sealing the hole with a concrete patch material flush with floor surface. Samples P2-SS01(0.5) and P2-SSReplicate were shipped overnight under chain-of-custody to ESC for analysis of VOCs (EPA Method TO-15 and TO-15 SIM). Soil vapor sample and soil vapor replicate sample results are summarized in Tables 4 and 5c, respectively. The ESC laboratory report is presented in Appendix D3.

2.7 Equipment Decontamination

Non-expendable sampling equipment was decontaminated at the beginning of the project and decontaminated between each soil sampling location. Downhole sampling equipment was hand-scrubbed in an Alconox™ and potable water solution and rinsed with potable water between sample locations.

On May 14, 2014, rinsate sample P2-RINSATE was collected and analyzed to evaluate the adequacy of the decontamination of the groundwater field parameters instrument (water level indicator). The rinsate sample was collected following the decontamination of the water level indicator after monitoring field parameters in monitoring well P2-MW01. Rinsate sample P2-RINSATE was obtained by spraying the water level indicator with distilled water and collecting the water into 40-milliliter vials. Sample P2-RINSATE was labeled, placed into an iced-cooler

and hand-delivered to TestAmerica in Arvada, Colorado for analysis of VOCs (EPA Method 8260B).

2.8 Investigation-Derived Waste

Two labeled drums of solid IDW (drill cuttings and decontamination solids) and one labeled drum of liquid IDW (well development water) were generated. The drums were affixed with non-hazardous waste labels indicating the drum contents, Terracon contact information and the date the waste was generated. The drums were stored on the northeast corner of the Perry III site. Terracon will coordinate with CCoD to profile, transport and dispose of the IDW at a permitted landfill facility.

3.0 SUMMARY OF ANALYTICAL RESULTS

The following sections summarize the soil, groundwater, and soil vapor analytical results. A summary of the analytical results is provided in Tables 2, 3, and 4 (Appendix C). The TestAmerica and ESC analytical reports are provided in Appendix D.

Constituent detections were compared to the U.S. EPA Residential and Commercial Regional Screening Levels (RSL, November 2013); the Colorado Department of Labor and Employment (CDLE), Division of Oil and Public Safety (OPS) Risk-Based Screening Levels (RBSL); the Colorado Department of Public Health and Environment (CDPHE) Colorado Soil Evaluation Values (CSEV) Groundwater Protection Levels (March 2014); the Colorado Groundwater Standards (CGS, Regulation 41, January 2013); and the CDPHE Indoor Air Guidance (September 2004) and CDPHE Air Screening Concentrations Table (March 12, 2012). A summary of soil, groundwater, and soil vapor analytical results are presented in Sections 3.1, 3.2, and 3.3 below.

3.1 Soil Data Summary

- DRO (36 milligrams per kilogram [mg/kg]), GRO (14 mg/kg), and motor oil (5.5 mg/kg, estimated) were reported in soil sample P2-SB01-1012 at a total TPH concentration of 55.5 mg/kg (estimated), below the CDLE-OPS, RBSL of 500 mg/kg.
- Various PAHs, were reported in soil sample P2-SB01-1012, but their concentrations were below their respective Industrial and Residential EPA RSLs.
- Acetone (0.023 mg/kg) was detected in the soil sample at a concentration below its Industrial and Residential EPA RSL. Remaining VOCs analyzed in the soil sample were not detected above method detection limits.

3.2 Groundwater Data Summary

- 1,2-dichloroethane (55 micrograms per liter [µg/l]) was detected in groundwater sample P2-MW01 above its CGS of 5 µg/l and above the CDPHE Groundwater Protection Value of 0.38 µg/l.
- Acetone (21 µg/l), 2-Butanone (MEK) (8.3 µg/l), cyclohexane (4.8 µg/l), 1,2-dichloropropane (0.49 µg/l, estimated), ethylbenzene (12 µg/l), isopropylbenzene (1.4 µg/l), methylcyclohexane (5.0 µg/l), toluene (0.38 µg/l, estimated), and total xylenes (55 µg/l) were reported in groundwater sample P2-MW01 at concentrations below their respective CGS.
- Remaining VOCs analyzed in the groundwater sample were not detected above method detection limits.

3.3 Soil Vapor Summary

- Benzene (0.32 micrograms per cubic meter [µg/m^3]), carbon tetrachloride (0.38 µg/m^3), ethylbenzene (1.6 µg/m^3), methylene chloride (2.4 µg/m^3), tetrachloroethylene (0.32 µg/m^3]), toluene (3.2 µg/m^3), and total xylenes (5.0 µg/m^3) were reported in sub-slab soil vapor sample P2-SS01(0.5). These concentrations and attenuated concentrations (concentrations with a 10X attenuation factor) were below their respective indoor air screening concentrations. The 10x attenuation factor is referenced in the CDPHE Indoor Air Guidance and accounts for attenuation of contaminant concentrations as they pass through the concrete floor slab.
- Remaining VOCs analyzed were not detected above reported detection limits.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

4.1 Replicate Samples

Consistent with *Section 9.1.1. Field Replicates* of the EPA-approved SAP, precision of replicate results was calculated using the relative percent difference (RPD) method in Section 6.1 of the QAPP.

4.1.1 Soil

GRO, DRO, motor oil, 2-methylnaphthalene, and naphthalene were detected above their respective method reporting limits in soil sample P2-SB01-1012 and replicate (P2-SBReplicate) (see Table 5a). The precision of the sampling program is calculated by the RPD method. RPDs were calculated only for results at or above method reporting limits. The RPDs for GRO, DRO, motor oil, 2-methylnaphthalene, and naphthalene were 117.6%, 26.5%, 74.3%, 102.8%, and 88.4%, respectively. Per Terracon's internal operating procedures, an RPD of 50%, or less, is acceptable for soil samples. These higher than normal RPDs are believed to be caused by

the heterogeneous distribution of TPH contaminants in the soil matrix. There is an inherent difficulty in preparing two subsamples with similar homogeneous distributions of contaminant. Soil sample P2-SB01-1012 likely had a heterogeneous distribution of contaminant which made it difficult to collect a representative replicate sample. As noted in TestAmerica's Case Narrative for the soil sample analysis report (Appendix D1), the laboratory experienced difficulty homogenizing the sample before sub-sampling, because the sample was a clay. In this instance, the RPD method was not an effective method to evaluate the precision of the soil sampling program.

4.1.2 Groundwater

Acetone, 2-butanone, cyclohexane, 1,2-dichloroethane, ethylbenzene, isopropylbenzene, methylcyclohexane, and xylenes were detected above their method reporting limits in groundwater sample P2-MW01 and replicate (P2-MWReplicate) (see Table 5b). The precision of the sampling program is calculated by the RPD method. RPDs were calculated only for results at or above method reporting limits. The RPDs for acetone, 2-butanone, cyclohexane, 1,2-dichloroethane, ethylbenzene, isopropylbenzene, methylcyclohexane, and xylenes were 10%, 11.5%, 8.7%, 7.5%, 8.7%, 7.4%, 10.5%, and 9.3%, respectively. Per Terracon's internal operating procedures, an RPD of 30%, or less, is acceptable for groundwater samples. Since the calculated RPD value was less than 30%, the precision of the groundwater sampling program was determined to be acceptable.

4.1.3 Soil Vapor

Benzene, carbon tetrachloride, ethylbenzene, tetrachloroethylene, toluene, m&p-xylene, and o-xylenes were detected above their respective method reporting limits in sub-slab soil vapor sample P2-SS01(0.5) and replicate (P2-SSReplicate) (see Table 5c). RPDs for benzene, carbon tetrachloride, ethylbenzene, tetrachloroethylene, toluene, m&p-xylene, and o-xylenes were 56%, 8.2%, 64.5%, 16.9%, 24.6%, 25%, and 24%, respectively. Per Terracon's internal operating procedures, an RPD of 50%, or less, is acceptable for soil vapor samples. The RPDs for carbon tetrachloride, tetrachloroethylene, toluene, and xylenes were acceptable. The RPDs for benzene and ethylbenzene were above Terracon's acceptable criteria for RPD (50%).

4.2 Rinsate Sample

Sample P2-RINSATE contained acetone (2.6 µg/l) and toluene (0.17 µg/l, estimated) at estimated concentrations below the method reporting limits (see Table 5d). Acetone is considered a common laboratory artifact and was also detected at similar concentrations in P2-SB01. The toluene detect is not believed to be from incomplete decontamination of the YSI 556 meter. The YSI 556 meter was decontaminated and a rinsate blank collected following the collection of the groundwater sample from P2-MW01. This groundwater sample contained an estimated toluene concentration of 0.38 µg/l. It is surmised that the decontamination efforts reduced, but did not eliminate, the potential for contaminant carry over. However, because the toluene detections are below the laboratory quantitation limit, it is our opinion that the decontamination procedures are considered to be acceptable for this project.

4.3 Trip Blank

The groundwater sample TRIP BLANK contained no VOCs above laboratory detection limits (see Table 5e). This data indicates a low potential for in-transit cross-contamination of samples. No sample trip blank was submitted with the soil samples.

4.4 Laboratory Control Samples

4.4.1 TestAmerica Report No. 280-55352-1 (Soil Samples)

During the VOC and PAH analyses, the samples were analyzed at dilutions due to target compound concentrations. Sample P2 - SBReplicate was analyzed at a 50X dilution for the VOCs and at a 2x dilution for the PAHs. Sample P2-SB01 was analyzed at a 5X dilution for the PAHs.

4.4.2 TestAmerica Report No. 280-55421-1 (Groundwater Samples)

There were no issues of note in the groundwater sample data.

4.4.3 ESC Report No. L699465 (Soil Vapor Samples)

There were no issues of note in the soil vapor data.

4.5 Overall Data Usability

4.5.1 Accuracy

All samples were extracted and/or analyzed within holding times.

Acetone was detected in one of the two soil VOC method blanks. Diesel range organics were detected in the soil method blank. Acetone is a common laboratory artifact and was also detected in sample P2-SB01 at a similar concentration to the method blank. Acetone is considered a nondetect at the reporting limit in the site sample. The concentration of diesel range organics detected in the soil method blank was at a concentration insufficient to contribute to the site sample results for this constituent.

Soil samples P2-SB01 and P2-SBReplicate had high surrogate recovery for nitrobenzene-d_5 for the PAH analysis. This may indicate a potential high bias in the PAH results. All other surrogate recoveries were within the laboratory control limits.

All laboratory control sample recoveries were within the laboratory established control limits.

Matrix spike/matrix spike duplicate (MS/MSD) analyses were not conducted on any site sample. Accuracy should be evaluated based upon the laboratory control sample recoveries.

4.5.2 Precision

Precision as measured by the relative percent difference (RPD) between the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) pairs, and the field duplicate pairs were within the acceptance criteria with the following exceptions:

The soil field duplicate pair showed some variability greater than the established QC criterion of 50%. The replicate sample was analyzed at a greater dilution for the VOCs but at a lower dilution for the PAHs. When considered with the exceedances for motor oil, gasoline range organics, 2-methylnaphthalene, and naphthalene, this field duplicate pair indicates heterogeneity in the site soil matrix. A conservative approach should be used in the evaluation of the site soil data.

The soil vapor field duplicate pair showed some variability greater than the established QC criterion of 50%. Two detected constituents, benzene (56%) and ethylbenzene (64.5%) exceeded the QC criterion. A conservative approach should be used in the evaluation of the soil vapor data due to the indicated variability. One conservative approach to evaluating sample data collected from this site is to compare the higher of two results (sample and its replicate) to the appropriate regulatory action level.

5.0 DATA EVALUATION

5.1 Soil

An elevated PID reading (1044 ppm) observed in a soil sample collected from boring P2-SB01 at a depth of 10 to 12 feet bgs. A split soil sample collected from this depth and submitted for laboratory analysis of VOCs and PAH did not contain VOCs or PAH above EPA Industrial or Residential RSLs. Several possible explanations for the apparently anomalous PID response include the following:

- Other VOCs such as organic acids, humic acids were present,
- The PID temporarily provided an erroneous reading due to moisture in the sample or other interference.

Based on the laboratory analysis of the soil sample for VOCs and PAH, there does not appear significant soil impacts in the vicinity of boring P2-SB01.

5.2 Groundwater

Analysis of a groundwater sample collected from site monitoring well P2-MW01, identified 1,2-dichloroethane (1,2-DCA) above the CGS. 1,2-DCA has been historically used as an anti-knock agent in leaded gasoline fuels. 1,2-DCA has been known to have been used in fuels in the U.S. since the early 1920's. The Phase I ESA (Smith 2014) did not identify the use of petroleum

fuels (e.g., gasoline, diesel, or motor oil) historically or currently on-site, therefore it is unlikely that the source of 1,2-DCA is from the site.

The Phase I ESA did identify several historical service stations and automotive repair shops adjacent to and possibly upgradient of the site. The potentiometric surface map in Exhibit 3 suggests that the Perry II site is likely hydraulically downgradient from the Perry III site, based on a west-to-east groundwater flow direction. Additionally, 1,2-DCA was identified in Perry III groundwater monitoring well (P3-MW02) near the existing oil/water separator and existing waste oil UST (see Terracon Phase II report for the Perry III Brownfield Investigation [Terracon 2014b]). This groundwater flow direction and analytical data suggest that the 1,2-DCA source could be from the on-site historical automotive refueling operations at the 4035 West Colfax Avenue (Perry III site). However, it is also possible that the source of the 1,2-DCA could be from one of the several historical off-site automotive refueling stations that were identified by Smith in their Phase I ESA of the site.

The downgradient extent of 1,2-DCA is partially bracketed. The absence of 1,2-DCA in Perry I wells PS-SB02 and PS-SB03 appears to define the downgradient extent to the east. The downgradient extent of 1,2-DCA to the north and south are not defined because Perry I wells PS-SB04 and PS-SB01 were dry at the time of sampling. Wells PS-SB04 and PS-SB01 are slow-recharging wells and contained water on May 21, 2014. These wells could be developed and sampled at a later date, if additional 1,2-DCA characterization information is needed.

5.3 Soil Vapor

Analysis of sub-slab soil vapor sample P2-SS01(0.5) did not identify VOCs above the CDPHE indoor air screening concentrations. This data indicates that there does not appear to be a VOC vapor intrusion risk on the site.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Terracon provides the following conclusions and recommendations:

- One soil boring was advanced on the site and completed as a groundwater monitoring well to approximate depth of 25 feet bgs.
- In the vicinity of boring P2-SB01, the site is underlain by concrete and brick pieces from the surface to approximately 1 feet bgs. Under the concrete and brick is a layer of dry, gray clay from approximately one to 15 feet bgs. Weathered claystone was encountered at approximately 15.5 feet bgs to at least 25 feet bgs.
- Depth to groundwater was observed at 16.14 (P2-MW01) feet bgs at the site on May 14, 2014. Groundwater flow was observed to be west-to-east across the site consistent with regional groundwater flow direction from literature.

- In boring P2-SB01, laboratory analysis of one soil sample did not identify constituents above their respective regulatory standards.
- The VOC 1,2-DCA was detected in groundwater sample P2-SB01 above the CGS. The source of 1,2-DCA could be from former automotive refueling operations at 4035 West Colfax Avenue (Perry III site) or from former automotive refueling operations off-site. The extent of 1,2-DCA is partially bracketed. Additional groundwater sampling could be conducted to more fully delineate the extent of 1,2-DCA in groundwater.
- Remaining VOCs were not detected in the groundwater sample above the CGS.
- Analysis of sub-slab soil vapor sample P2-SS01(0.5) did not identify VOCs above the calculated indoor air screening concentration.
- Terracon recommends that the property owner consider entering the site into the CDPHE Voluntary Cleanup Program to develop remedial action materials management plans.

7.0 REFERENCES

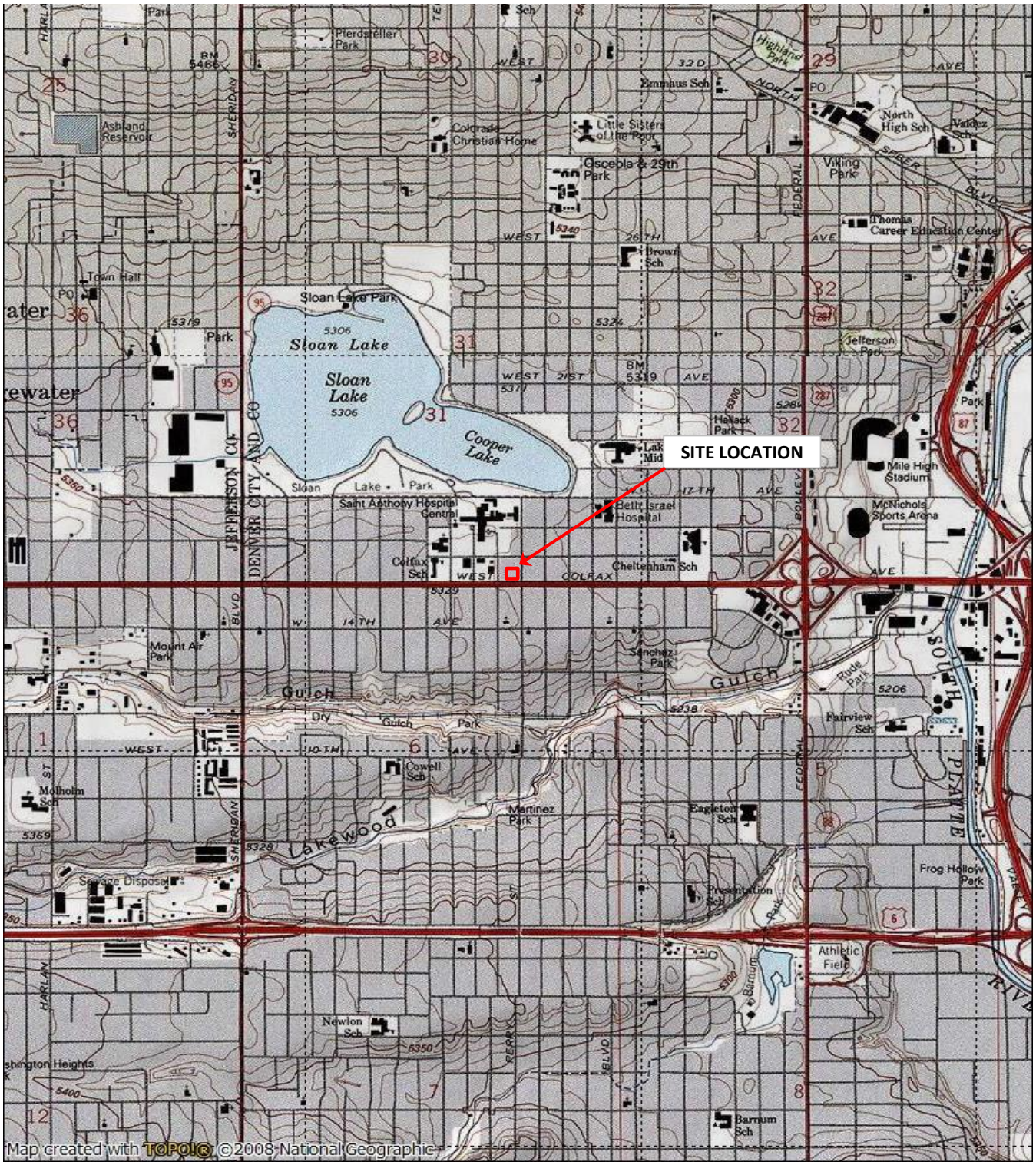
Smith Environmental & Engineering (Smith)
2014 *Phase I Environmental Site Assessment, 4017 West Colfax Avenue, Denver, Denver County, Colorado,* March 26, 2014.

Terracon Consultants, Inc. (Terracon)
2014a *Sampling and Analysis Plan, Revision 1, 4017 West Colfax Avenue, Denver, Colorado,* April 29, 2014.

2014b *Phase II Site Investigation, Revision 0, 4035 West Colfax Avenue, Denver, Colorado,* June 2, 2014.

APPENDIX A

EXHIBITS



Source: USGS 7.5-Minute Series Topographic Map, Arvada and Ft. Logan, Colorado Quadrangles, Published 1990, Revised 1994

PROJECT MANAGER: JCD	**PROJECT NO:** 25147007	Terracon Consulting Engineers & Scientist 10625 W I-70 FRONTAGE RD N, SUITE 3 WHEAT RIDGE, CO 80033 PH. (303) 423-3300 FAX. (303) 423-3353	**SITE LOCATION MAP** PERRY II BROWNFIELD PROJECT 4017 WEST COLFAX AVENUE DENVER, COLORADO	EXHIBIT NO: 1
DRAWN BY: JPA	**SCALE:** NOT TO SCALE			
CHECKED BY: JCD	**FILE NAME:** EXHIBITS.XLSX			
APPROVED BY: DFS	**DATE:** 04.13.14			

LEGEND

P2- SB01/MW01 — Soil Boring/Monitoring Well Location

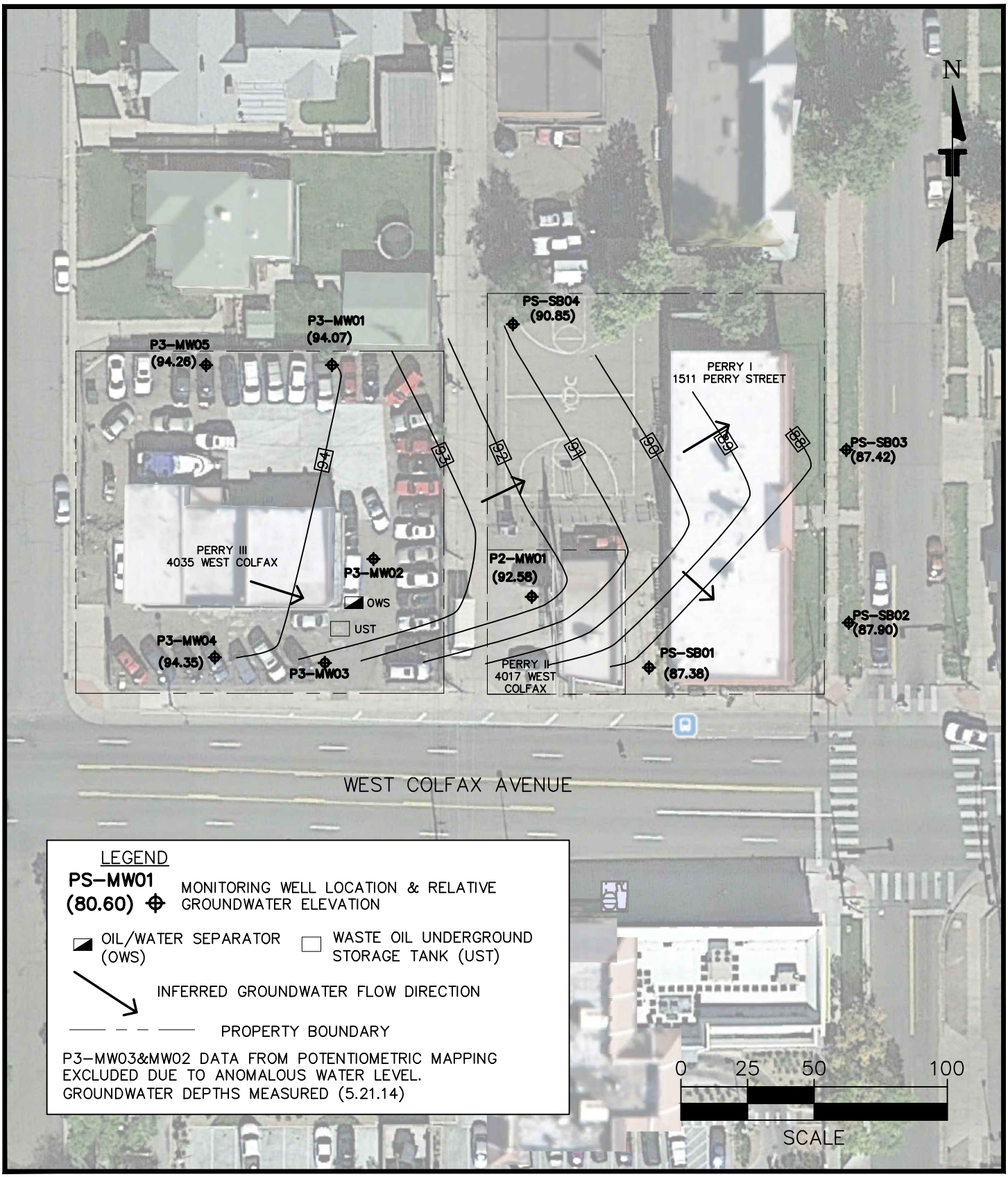
SS01 — Sub-Slab Soil Vapor Point

Source: Google Earth Pro 2013

Base drawing obtained from Google Earth 2013 and may not reflect the current site conditions.

NORTH

Exhibit 2 **SITE DIAGRAM**	Terracon	**Perry II Brownfield Project** **4017 West Colfax Avenue** **Denver, Colorado** **Project No. 25147007**



PRJT MNGR:	JCD
DRAWN:	JCG
CHECKED:	JCD
APPROVED:	DFS
PROJECT NO:	25147007
SCALE:	1"≈50'
FILE NAME:	EXHIBIT 3
DATE:	05.28.14

Terracon
Consulting Engineers & Scientists
10625 W I-70 FRONTAGE RD N, SUITE 3 WHEAT RIDGE, CO 80033
PH. (303) 423-3300 FAX. (303) 423-3353

POTENTIOMETRIC SURFACE MAP

PERRY II BROWNFIELDS PROJECT
4017 WEST COLFAX AVE
DENVER, COLORADO

N:\Projects\2014\25147013\Working Files\Diagrams-Drawings-Figures

Exhibit No:

3

APPENDIX B

SOIL BORING LOG AND WELL DEVELOPMENT FORM

LOG OF WELL NO. P2-SB01

CLIENT
City and County of Denver, City of Lakewood

SITE
4017 West Colfax Avenue
Denver Colorado

PROJECT
Perry II

BOREHOLE DIA.: **in**
WELL DIA.: **2 in**
TOP OF PROTECTOR PIPE: **ft**
TOP OF CASING: **ft**
GROUND SURFACE ELEV.:

GRAPHIC LOG	DESCRIPTION	WELL DETAIL	DEPTH, ft.	USCS SYMBOL	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES RECOVERY, %	SAMPLES BLOW COUNT (18")	TESTS DRY UNIT WEIGHT, pcf	TESTS PID READING (ppm)	TESTS LAB SAMPLE NUMBER
	1 **Concrete**										
	Clay moderate plasticity, iron staining, brown/gray, dry		5	CL		SS	75	17		0.0	
			10	CL		SS	90	18		1044	P2-SB01-1012
	15										
	15.5 **Clay** low plasticity, trace coarse-grained gravel, gray/dark gray, dry		15	CL		SS	100	47		193	
	Bedrock weathered claystone, blueish gray/light brown increasing in hardness with depth		20			SS	100	48		11.4	
	25										
	Sampled to 27' below ground surface (total depth). Installed well at 25' bgs.		25			SS	100	40/2"		9.0	
	27										

The stratification lines represent the approximate boundary lines between soil and rock types: in-situ, the transition may be gradual.

* ND indicates a reading of less than the field detection limit (FDL) of one (1) part per million isobutylene equivalents (ppmi).

WATER LEVEL OBSERVATIONS, ft			
WL	▽ None	WD	▼
WL	▼		▼
WL			

Terracon

BORING STARTED			5-12-14
BORING COMPLETED			5-12-14
RIG	HSA	LOGGED	MAS
APPROVED	JCD	JOB #	25147007

Terracon

Well Development Form

Project Name:	Perry II	Well No.:	P2-SB01/P2-MW01
Method of Development:	Hand Bail/Surge	Date:	5/14/2014
Field Professional:	Meredith Stewart	Pump Type:	NA
Reviewed By:	John Dellaport	Serial No.:	NA

	Before	Reference Point	After
Depth to Water (ft):	16.14	TOC	21.9
Depth to Sediment (ft):	NA	NA	NA
Total Depth of the Well (ft):	22.85	TOC	22.85
Water column height (ft):	6.71	NA	0.95
Diameter of the Well (inches):	2"	NA	2"

Volume of Water Conversion

1" Well 0.041 gal/ft 4" Well 0.653

2" Well 0.163 gal/ft 6" Well 1.469

Casing Volume (gal) = (Total Depth - Depth to Water) x Volume of Water Conversion

Casing Volume (gal): 1.09

Development Volume = Casing Volume x 10

Development Volume (gal): 10.9

Time	pH	ORP	Temp.	Conductivity	Pump Rate	Vol. of Water Removed	Water Level	Comments
		mV	(°C)	(mmhos)	(gal/minute)	(gal)	(ft)	
0930	7.46	91.1	16.67	4.231	NA	9	NA	
0938	7.51	93.1	15.73	4.159	NA	9.5	NA	
0942	7.46	105.5	15.54	4.094	NA	10.0	NA	Well running dry

Development is considered complete and the well adequately purged for sampling when the following are satisfied:

1. Ten well casing volumes of water have been removed while measuring the groundwater physical parameters on the above table.
2. Sediment load has been removed.
3. When parameters (pH, temperature, conductivity) vary less than +/- 10% over three consecutive measurements.

TOC: top of casing
NA: not applicable

APPENDIX C

ANALYTICAL SUMMARY TABLES

Table 1
Groundwater Level Measurements and Survey Data
Perry II Brownfield Project
4017 West Colfax Avenue
Denver, Colorado
Terracon Project Number 25147007

Monitoring Well	Site	Relative TOC [1]	DTW (5/21/14)	GW Elevation
PS-SB02	Perry I	98.66	10.76	87.90
PS-SB03	Perry I	98.44	11.02	87.42
PS-SB01	Perry I	99.60	12.22	87.38
PS-SB04	Perry I	103.41	12.56	90.85
P2-MW01	Perry II	103.17	10.59	92.58
P3-MW01	Perry III	103.94	9.87	94.07
P3-MW02	Perry III	103.83	8.12	95.71
P3-MW03	Perry III	103.92	21.22	82.70
P3-MW04	Perry III	104.27	9.92	94.35
P3-MW05	Perry III	104.57	10.31	94.26

BR : Bedrock
DTBR : Depth to Bedrock
DTW : Depth to Groundwater
TOC : Top of Casing
1) Site datum is the southeast corner of the vacant Boost Mobile building at 4017 West Colfax Avenue.
Perry I : 1511 Perry Street
Perry II : 4017 West Colfax Avenue
Perry III : 4035 West Colfax Avenue

Table 2
Detected Constituents in Soil
4017 West Colfax Avenue
Denver, Colorado
Terracon Project Number 25147007

Sample Identification	Sample Date	Sample Depth (feet below ground surface)	Total Petroleum Hydrocarbons by 8015B (mg/kg)			VOCs by 8260B (mg/kg)	Semivolatile Organic Compounds by 8270C (mg/kg)												
			Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil (MO)	Acetone	Acenaphthene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Chrysene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
P2-SB01-1012	5/12/2014	10-12	14	36	5.5 J	0.023	0.0033 J	0.0016 J	0.0017 J	0.0022 J	0.0018 J	0.0021 J	0.0027 J	0.0016 J	0.0015 J	0.81	0.62	0.004 J	0.0029 J
CDLE OPS RBSL (Total TPH = GRO + DRO + MO) [1]			500	500	500	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
EPA Industrial RSLs [2]			NE	NE	NE	630,000	33,000	2.1	0.21	2.1	NE	210	22,000	22,000	2	2,200	18	NE	17,000
EPA Residential RSLs [2]			NE	NE	NE	61,000	3,400	0.15	0.015	0.15	NE	15	2,300	2,300	0.15	230	3.6	NE	1,700
CSEV [3]			NE	NE	NE	32	1,000	1,000	1,000	1,000	NE	1,000	1,000	1,000	1,000	7.4	23	NE	1,000

1) Colorado Department of Labor and Employment (CDLE), Division of Oil and Public Safety (OPS), Risk-Based Screening Level (RBSL)

2) Environmental Protection Agency (EPA) Regional Screening Levels (RSLs), November 2013.

3) Colorado Department of Public Health and Environment (CDPHE) Colorado Soil Evaluation Values (CSEV) Groundwater Protection Levels, March 2014.

J : Result is less than the analytical method reporting limit but greater than or equal to the analytical method detection limit and the concentration is an approximate value.

< : Less than the analytical method reporting limit
mg/kg : milligrams per kilogram
VOCs : Volatile Organic Compounds
NE : Not Established

Table 3
Detected Constituents in Groundwater
4017 West Colfax Avenue
Denver, Colorado
Terracon Project Number 25147007

Sample Identification	Sample Date	VOCs By 8260B (µg/L)									
		Acetone	2-Butanone (MEK)	Cyclohexane	1,2-Dichloroethane	1,2-Dichloropropane	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Toluene	Xylenes (Total)
P2-MW01	5/14/2014	21	8.3	4.8	**55**	0.49 J	12	1.4	5.0	0.38 J	55
CGS [1]		6,300	NR	NR	5	5	700	NR	NR	1,000	1,400
CDPHE Groundwater Protection Values - Water Standard [2]		6,300	4,200	NR	0.38	0.52	700	NR	NR	560	1,400

1) Colorado Department of Public Health and Environment Groundwater Standards (January 31, 2013).

2) Colorado Department of Public Health and Environment Groundwater Protection Values Soil Cleanup Table - Water Standards (March 2014).

J : Result is less than the analytical method reporting limit but greater than or equal to the analytical method detection limit and the concentration is an approximate value.

µg/L : micrograms/liter

MEK : Methyl ethyl ketone

NR : Not Regulated

VOCs : Volatile Organic Compounds

< : Less than analytical method reporting limit

Table 4
Detected Constituents in Soil Vapor
4017 West Colfax Avenue
Denver, Colorado
Terracon Project Number 25147007

Sample Name	Sample Date	EPA Method TO-15SIM (µg/m^3)				EPA Method TO-15 (µg/m^3)			
		Benzene	Carbon Tetrachloride	Ethylbenzene	Tetrachloroethylene	Methylene Chloride	Toluene	m&p-Xylene	o-Xylene
P2-SS01(0.5)	5/15/2014	0.32	0.38	1.6	0.32	2.4	3.2	3.6	1.4
Attenuated Sample P2-SS01(0.5) [2]	5/15/2014	0.032	0.038	0.16	0.032	0.24	0.32	0.36	0.14
CDPHE Air Screening Concentration [1]		1.6	2.0	4.9	47.2	26	22000	440	440

1) Colorado Department of Public Health and Environment (CDPHE) Air Screening Concentrations Table - Worker Remediation Goal (March 12, 2012).

2) Attenuated soil vapor concentration using a 10X Attenuation Factor.

µg/m^3 : micrograms per cubic meter

Table 5a
Quality Assurance / Quality Control Sample (Soil)
4017 West Colfax Avenue
Denver, Colorado
Terracon Project Number 25147007

Sample Identification	Sample Date	Sample Depth (feet below ground surface)	Total Petroleum Hydrocarbons by 8015B (mg/kg)			Semivolatile Organic Compounds by 8270C (mg/kg)						
			Motor Oil	Diesel Range Organics (DRO)	Gasoline Range Organics (GRO)	Acenaphthene	Fluoranthene	Fluorene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
P2-SB01-1012	5/12/2014	10-12	5.5	36	14	0.0033 J	0.0027 J	0.0016 J	0.81	0.62	0.004 J	0.0029 J
P2-SBReplicate	5/12/2014	10-12	12	47	54	0.0016 J	0.0016 J	0.00086 J	0.26	0.24	0.0023 J	0.0017 J
Relative Percent Difference			74.3	26.5	117.6	NC	NC	NC	102.8	88.4	NC	NC

Table 5b
Quality Assurance / Quality Control Sample (Groundwater)

Sample Identification	Sample Date	VOCs By 8260B (µg/L)									
		Acetone	2-Butanone (MEK)	Cyclohexane	1,2-Dichloroethane	1,2-Dichloropropane	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Toluene	Xylenes (Total)
P2-MW01	5/14/2014	21	8.3	4.8	55	0.49 J	12	1.4	5.0	0.38 J	55
P2-MWReplicate	5/14/2014	19	7.4	4.4	51	0.46 J	11	1.3	4.5	0.33 J	51
Relative Percent Difference		10	11.5	8.7	7.5	NC	8.7	7.4	10.5	NC	9.3

Table 5c
Quality Assurance / Quality Control Sample (Soil Vapor)

Sample Identification	Sample Date	VOCs By TO-15SIM (µg/m^3)				VOCs By TO-15SIM (µg/m^3)		
		Benzene	Carbon Tetrachloride	Tetrachloroethylene	Ethylbenzene	Toluene	m&p-Xylene	o-Xylene
P2-SS01(0.5)	5/21/2014	0.32	0.38	0.32	1.6	3.2	3.6	1.4
P2-SSReplicate	5/21/2014	0.18	0.35	0.27	0.82	2.5	2.8	1.1
Relative Percent Difference		56	8.2	16.9	64.5	24.6	25	24

Table 5d
Quality Assurance / Quality Control Sample (Rinsate)

Sample Identification	Sample Date	VOCs By 8260B (µg/L)	
		Acetone	Toluene
P2-RINSATE	5/14/2014	2.6 J	0.17 J

Table 5e
Quality Assurance / Quality Control Sample (Trip Blank)

Sample Identification	Sample Date	VOCs By 8260B (µg/L)
TRIP BLANK	5/14/2014	ND

J : Result is less than the analytical method reporting limit but greater than or equal to the analytical method detection limit and the concentration is an approximate value.

µg/L : micrograms/liter, ug/m^3 : micrograms per cubic meter
NC : RPD not calculated for estimated values
RPD : Relative percent difference
VOCs : Volatile Organic Compounds
< : Less than the analytical method reporting limit
ND : Not Detected

APPENDIX D

LABORATORY REPORTS

APPENDIX D1

TESTAMERICA LABORATORY REPORT FOR SAMPLES COLLECTED ON MAY 12, 2014

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-55352-1
Client Project/Site: Terracon - Perry Street II
Revision: 1

For:
Terracon Consulting Eng & Scientists
10625 W I-70 Frontage Rd. N.
Wheatridge, Colorado 80033

Attn: John Dellaport

Donna Rydberg

Authorized for release by:
5/22/2014 2:57:23 PM

Donna Rydberg, Senior Project Manager
(303)736-0192
donna.rydberg@testamericainc.com

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Job ID: 280-55352-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: Terracon Consulting Engineering & Scientists

Project: Perry II, Denver CO

Report Number: 280-55352-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

Samples were received at the TestAmerica Denver laboratory on May 12, 2014. The samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 4/1ºC.

VOLATILE ORGANIC COMPOUNDS - METHOD 8260B

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required. a dilution was performed on sample P2-SBREPLICATE (280-55352-2) due to high analyte concentrations. The reporting limits were raised accordingly. Please see the Lab Chronicle section of the report for the initial and final extract volumes.

Acetone was detected in method blank MB 280-226073/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated samples reported a result above the MDL and/or RL, the result has been flagged.

Several surrogate and spike recoveries failed the recovery criteria in the MS and MSD in batch 226344. The associated LCS was in control and provides evidence that operating procedures were in control.

No other difficulties were encountered during the VOC analysis.

All other quality control parameters were within the acceptance limits.

SEMIVOLATILE ORAGANIC COMPOUNDS - METHOD 8270C SIM

The following samples could not be thoroughly homogenized before sub-sampling was performed due to sample matrix: P2-SB01-1012 (280-55352-1), P2-SBREPLICATE (280-55352-2). The sample was clay.

Samples P2-SB01-1012 (280-55352-1) and P2-SBREPLICATE (280-55352-2) were analyzed both dilute and undilute due to high concentrations of target compounds. Only one result was reported for each analyte. The reporting limits were raised accordingly in the diluted runs. The percent recovery for surrogate Nitrobenzene-d5 exceeded upper control limits in samle P2-SB01-1012 (280-55352-1) and P2-SBREPLICATE (280-55352-2) in the 1X dilutions. Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed. Surrogate recoveries were also outside control limits in the diluted runs. See the data for details.

Spike recoveries and RPD values were outside control in the MS and MSD associated with batch 226270. The associated LCS was in control and provides evidence that operating procedures were in control.

Job ID: 280-55352-1 (Continued)

Laboratory: TestAmerica Denver (Continued)

No other analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GASOLINE RANGE ORGANICS - METHOD 8015C

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

DIESEL RANGE ORGANICS - METHOD 8015C

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GENERAL CHEMISTRY - MOISTURE

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

REVISION 1 - 5/22/2013

The wrong units were reported for sample P2-SBREPLICATE (280-55352-2). Water units were reported and this is a soil sample. The units have been fixed and the corrected data will be found in this report.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery exceeds the control limits
X	Surrogate is outside control limits

GC/MS Semi VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
X	Surrogate is outside control limits
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
F1	MS and/or MSD Recovery exceeds the control limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
F2	MS/MSD RPD exceeds control limits

GC Semi VOA

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Terracon - Perry Street II

TestAmerica Job ID: 280-55352-1

Client Sample ID: P2-SB01-1012 — Lab Sample ID: 280-55352-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	23	B	23	6.1	ug/Kg	1	☼	8260B	Total/NA
Acenaphthene	3300	J	6000	190	ng/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]anthracene	1600	J	6000	1100	ng/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]pyrene	1700	J	6000	880	ng/Kg	1	☼	8270C SIM	Total/NA
Benzo[b]fluoranthene	2200	J	6000	1400	ng/Kg	1	☼	8270C SIM	Total/NA
Benzo[g,h,i]perylene	1800	J	6000	1300	ng/Kg	1	☼	8270C SIM	Total/NA
Chrysene	2100	J	6000	1200	ng/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	2700	J	6000	1200	ng/Kg	1	☼	8270C SIM	Total/NA
Fluorene	1600	J	6000	560	ng/Kg	1	☼	8270C SIM	Total/NA
Indeno[1,2,3-cd]pyrene	1500	J	6000	1300	ng/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	4000	J	6000	1300	ng/Kg	1	☼	8270C SIM	Total/NA
Pyrene	2900	J	6000	1300	ng/Kg	1	☼	8270C SIM	Total/NA
2-Methylnaphthalene - DL	810000		30000	1800	ng/Kg	5	☼	8270C SIM	Total/NA
Naphthalene - DL	620000		30000	1900	ng/Kg	5	☼	8270C SIM	Total/NA
GRO (C6-C10)	14		1.4	0.37	mg/Kg	1	☼	8015B	Total/NA
DRO (C10-C28)	36	B	4.8	0.81	mg/Kg	1	☼	8015B	Total/NA
Motor Oil (C20-C38)	5.5	J	14	4.7	mg/Kg	1	☼	8015B	Total/NA

Client Sample ID: P2-SBREPLICATE — Lab Sample ID: 280-55352-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ethylbenzene	270		250	34	ug/Kg	1		8260B	Total/NA
Isopropylbenzene	140	J	250	29	ug/Kg	1		8260B	Total/NA
Methylcyclohexane	470		250	42	ug/Kg	1		8260B	Total/NA
m-Xylene & p-Xylene	1100		250	78	ug/Kg	1		8260B	Total/NA
o-Xylene	430		130	35	ug/Kg	1		8260B	Total/NA
Xylenes, (Total)	1500		280	85	ug/Kg	1		8260B	Total/NA
Acenaphthene	1600	J	5800	190	ng/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	1600	J	5800	1200	ng/Kg	1	☼	8270C SIM	Total/NA
Fluorene	860	J	5800	550	ng/Kg	1	☼	8270C SIM	Total/NA
2-Methylnaphthalene	260000		5800	360	ng/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	2300	J	5800	1300	ng/Kg	1	☼	8270C SIM	Total/NA
Pyrene	1700	J	5800	1300	ng/Kg	1	☼	8270C SIM	Total/NA
Naphthalene - DL	240000		12000	760	ng/Kg	2	☼	8270C SIM	Total/NA
GRO (C6-C10)	54		1.4	0.38	mg/Kg	1	☼	8015B	Total/NA
DRO (C10-C28)	47	B	4.8	0.81	mg/Kg	1	☼	8015B	Total/NA
Motor Oil (C20-C38)	12	J	14	4.7	mg/Kg	1	☼	8015B	Total/NA

This Detection Summary does not include radiochemical test results.

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Terracon - Perry Street II

TestAmerica Job ID: 280-55352-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL DEN
8015B	Gasoline Range Organics - (GC)	SW846	TAL DEN
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL DEN
Moisture	Percent Moisture	EPA	TAL DEN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Terracon - Perry Street II

TestAmerica Job ID: 280-55352-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-55352-1	P2-SB01-1012	Solid	05/12/14 09:50	05/12/14 16:55
280-55352-2	P2-SBREPLICATE	Solid	05/12/14 10:00	05/12/14 16:55

Client: Terracon Consulting Eng & Scientists
Project/Site: Terracon - Perry Street II

TestAmerica Job ID: 280-55352-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid
Percent Solids: 83.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**23**	**B**	23	6.1	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Benzene	ND		5.6	0.53	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Bromoform	ND		5.6	0.26	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Bromomethane	ND		11	0.56	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
2-Butanone (MEK)	ND		23	2.1	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Carbon disulfide	ND		5.6	0.47	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Carbon tetrachloride	ND		5.6	0.71	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Chlorobenzene	ND		5.6	0.61	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Chlorobromomethane	ND		5.6	0.34	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Chlorodibromomethane	ND		5.6	0.64	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Chloroethane	ND		11	1.0	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Chloroform	ND		11	0.33	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Chloromethane	ND		11	0.87	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
cis-1,2-Dichloroethene	ND		2.8	0.63	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
cis-1,3-Dichloropropene	ND		5.6	1.5	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Cyclohexane	ND		5.6	0.45	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,2-Dibromo-3-Chloropropane	ND		11	0.68	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,2-Dibromoethane	ND		5.6	0.59	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,2-Dichlorobenzene	ND		5.6	0.51	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,3-Dichlorobenzene	ND		5.6	0.54	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,4-Dichlorobenzene	ND		5.6	0.88	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Dichlorobromomethane	ND		5.6	0.25	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Dichlorodifluoromethane	ND		11	0.59	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,1-Dichloroethane	ND		5.6	0.24	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,2-Dichloroethane	ND		5.6	0.79	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,1-Dichloroethene	ND		5.6	0.66	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,2-Dichloropropane	ND		5.6	0.62	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,4-Dioxane	ND		560	63	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Ethylbenzene	ND		5.6	0.76	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
2-Hexanone	ND		23	5.5	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Isopropylbenzene	ND		5.6	0.66	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Methyl acetate	ND		11	3.1	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Methylcyclohexane	ND		5.6	0.47	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Methylene Chloride	ND		5.6	1.8	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
4-Methyl-2-pentanone (MIBK)	ND		23	4.9	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Methyl tert-butyl ether	ND		23	0.38	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
m-Xylene & p-Xylene	ND		2.8	1.2	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
o-Xylene	ND		2.8	0.69	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Styrene	ND		5.6	0.71	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,1,2,2-Tetrachloroethane	ND		5.6	0.69	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Tetrachloroethene	ND		5.6	0.66	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Toluene	ND		5.6	0.78	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
trans-1,2-Dichloroethene	ND		2.8	0.44	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
trans-1,3-Dichloropropene	ND		5.6	0.76	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,2,3-Trichlorobenzene	ND		5.6	0.85	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,2,4-Trichlorobenzene	ND		5.6	0.82	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,1,1-Trichloroethane	ND		5.6	0.59	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,1,2-Trichloroethane	ND		5.6	0.99	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Trichloroethene	ND		5.6	0.26	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid
Percent Solids: 83.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND		11	1.2	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
1,1,2-Trichlorotrifluoroethane	ND		23	0.51	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Vinyl chloride	ND		5.6	1.5	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1
Xylenes, (Total)	ND		4.0	1.4	ug/Kg	☼	05/15/14 14:00	05/16/14 01:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*58 - 140*	*05/15/14 14:00*	*05/16/14 01:46*	*1*
Toluene-d8 (Surr)	*99*		*80 - 126*	*05/15/14 14:00*	*05/16/14 01:46*	*1*
4-Bromofluorobenzene (Surr)	*88*		*76 - 127*	*05/15/14 14:00*	*05/16/14 01:46*	*1*
Dibromofluoromethane (Surr)	*92*		*75 - 121*	*05/15/14 14:00*	*05/16/14 01:46*	*1*

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		1000	400	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Benzene	ND		250	45	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Bromoform	ND		250	160	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Bromomethane	ND		500	47	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
2-Butanone (MEK)	ND		1000	300	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Carbon disulfide	ND		250	64	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Carbon tetrachloride	ND		250	17	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Chlorobenzene	ND		250	30	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Chlorobromomethane	ND		250	47	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Chlorodibromomethane	ND		250	33	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Chloroethane	ND		500	44	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Chloroform	ND		250	46	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Chloromethane	ND		500	50	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
cis-1,2-Dichloroethene	ND		130	22	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
cis-1,3-Dichloropropene	ND		250	27	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Cyclohexane	ND		250	28	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,2-Dibromo-3-Chloropropane	ND		500	86	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,2-Dibromoethane	ND		250	25	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,2-Dichlorobenzene	ND		250	94	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,3-Dichlorobenzene	ND		250	41	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,4-Dichlorobenzene	ND		250	25	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Dichlorobromomethane	ND		250	40	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Dichlorodifluoromethane	ND		500	22	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,1-Dichloroethane	ND		250	51	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,2-Dichloroethane	ND		250	25	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,1-Dichloroethene	ND		250	51	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,2-Dichloropropane	ND		250	46	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,4-Dioxane	ND		25000	2500	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Ethylbenzene	**270**		250	34	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
2-Hexanone	ND		1000	220	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Isopropylbenzene	**140**	**J**	250	29	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Methyl acetate	ND		1000	240	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Methylcyclohexane	**470**		250	42	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Methylene Chloride	ND		250	69	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
4-Methyl-2-pentanone (MIBK)	ND		1000	230	ug/Kg		05/19/14 07:54	05/19/14 13:31	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		250	50	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
m-Xylene & p-Xylene	**1100**		250	78	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
o-Xylene	**430**		130	35	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Styrene	ND		250	26	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,1,2,2-Tetrachloroethane	ND		250	29	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Tetrachloroethene	ND		250	27	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Toluene	ND		250	39	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
trans-1,2-Dichloroethene	ND		130	45	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
trans-1,3-Dichloropropene	ND		250	41	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,2,3-Trichlorobenzene	ND		250	35	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,2,4-Trichlorobenzene	ND		250	47	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,1,1-Trichloroethane	ND		250	20	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,1,2-Trichloroethane	ND		250	27	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Trichloroethene	ND		250	23	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Trichlorofluoromethane	ND		500	50	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
1,1,2-Trichlorotrifluoroethane	ND		1000	66	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Vinyl chloride	ND		500	27	ug/Kg		05/19/14 07:54	05/19/14 13:31	1
Xylenes, (Total)	**1500**		280	85	ug/Kg		05/19/14 07:54	05/19/14 13:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*62 - 133*	*05/19/14 07:54*	*05/19/14 13:31*	*1*
Dibromofluoromethane (Surr)	*81*		*60 - 133*	*05/19/14 07:54*	*05/19/14 13:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*68*		*50 - 139*	*05/19/14 07:54*	*05/19/14 13:31*	*1*
Toluene-d8 (Surr)	*94*		*68 - 143*	*05/19/14 07:54*	*05/19/14 13:31*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid
Percent Solids: 83.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**3300**	**J**	6000	190	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Acenaphthylene	ND		6000	200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Anthracene	ND		6000	860	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Benzo[a]anthracene	**1600**	**J**	6000	1100	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Benzo[a]pyrene	**1700**	**J**	6000	880	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Benzo[b]fluoranthene	**2200**	**J**	6000	1400	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Benzo[g,h,i]perylene	**1800**	**J**	6000	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Benzo[k]fluoranthene	ND		6000	1200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Chrysene	**2100**	**J**	6000	1200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Dibenz(a,h)anthracene	ND		6000	1600	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Fluoranthene	**2700**	**J**	6000	1200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Fluorene	**1600**	**J**	6000	560	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Indeno[1,2,3-cd]pyrene	**1500**	**J**	6000	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Phenanthrene	**4000**	**J**	6000	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1
Pyrene	**2900**	**J**	6000	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*89*		*39 - 120*	*05/14/14 12:27*	*05/16/14 16:08*	*1*
Nitrobenzene-d5	*221*	*X*	*42 - 120*	*05/14/14 12:27*	*05/16/14 16:08*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid
Percent Solids: 83.4

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	77		35 - 124	05/14/14 12:27	05/16/14 16:08	1

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**1600**	**J**	5800	190	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Acenaphthylene	ND		5800	200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Anthracene	ND		5800	840	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Benzo[a]anthracene	ND		5800	1000	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Benzo[a]pyrene	ND		5800	860	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Benzo[b]fluoranthene	ND		5800	1400	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Benzo[g,h,i]perylene	ND		5800	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Benzo[k]fluoranthene	ND		5800	1200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Chrysene	ND		5800	1200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Dibenz(a,h)anthracene	ND		5800	1500	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Fluoranthene	**1600**	**J**	5800	1200	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Fluorene	**860**	**J**	5800	550	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Indeno[1,2,3-cd]pyrene	ND		5800	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
2-Methylnaphthalene	**260000**		5800	360	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Phenanthrene	**2300**	**J**	5800	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1
Pyrene	**1700**	**J**	5800	1300	ng/Kg	☼	05/14/14 12:27	05/16/14 16:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	84		39 - 120	05/14/14 12:27	05/16/14 16:36	1
Nitrobenzene-d5	178	X	42 - 120	05/14/14 12:27	05/16/14 16:36	1
Terphenyl-d14	77		35 - 124	05/14/14 12:27	05/16/14 16:36	1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid
Percent Solids: 83.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	**810000**		30000	1800	ng/Kg	☼	05/14/14 12:27	05/17/14 07:26	5
Naphthalene	**620000**		30000	1900	ng/Kg	☼	05/14/14 12:27	05/17/14 07:26	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	96	D	39 - 120	05/14/14 12:27	05/17/14 07:26	5
Nitrobenzene-d5	364	X D	42 - 120	05/14/14 12:27	05/17/14 07:26	5
Terphenyl-d14	0	X D	35 - 124	05/14/14 12:27	05/17/14 07:26	5

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**240000**		12000	760	ng/Kg	☼	05/14/14 12:27	05/17/14 07:53	2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	91	D	39 - 120	05/14/14 12:27	05/17/14 07:53	2

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) - DL (Continued)

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid
Percent Solids: 83.0

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	227	X D	42 - 120	05/14/14 12:27	05/17/14 07:53	2
Terphenyl-d14	91	D	35 - 124	05/14/14 12:27	05/17/14 07:53	2

Method: 8015B - Gasoline Range Organics - (GC)

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid
Percent Solids: 83.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	14		1.4	0.37	mg/Kg	☼	05/13/14 14:51	05/14/14 19:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	85		77 - 123	05/13/14 14:51	05/14/14 19:06	1

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	54		1.4	0.38	mg/Kg	☼	05/13/14 14:51	05/14/14 19:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
a,a,a-Trifluorotoluene	112		77 - 123	05/13/14 14:51	05/14/14 19:30	1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid
Percent Solids: 83.4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	36	B	4.8	0.81	mg/Kg	☼	05/13/14 20:25	05/15/14 14:36	1
Motor Oil (C20-C38)	5.5	J	14	4.7	mg/Kg	☼	05/13/14 20:25	05/15/14 14:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	65		49 - 115	05/13/14 20:25	05/15/14 14:36	1

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid
Percent Solids: 83.0

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	47	B	4.8	0.81	mg/Kg	☼	05/13/14 20:25	05/15/14 15:04	1
Motor Oil (C20-C38)	12	J	14	4.7	mg/Kg	☼	05/13/14 20:25	05/15/14 15:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	71		49 - 115	05/13/14 20:25	05/15/14 15:04	1

Client: Terracon Consulting Eng & Scientists
Project/Site: Terracon - Perry Street II

TestAmerica Job ID: 280-55352-1

General Chemistry

Client Sample ID: P2-SB01-1012
Date Collected: 05/12/14 09:50
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-1
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	17		0.10	0.10	%			05/14/14 12:03	1
Percent Solids	83		0.10	0.10	%			05/14/14 12:03	1

Client Sample ID: P2-SBREPLICATE
Date Collected: 05/12/14 10:00
Date Received: 05/12/14 16:55

Lab Sample ID: 280-55352-2
Matrix: Solid

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	17		0.10	0.10	%			05/14/14 12:03	1
Percent Solids	83		0.10	0.10	%			05/14/14 12:03	1

GC/MS VOA

Prep Batch: 226073

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55352-1	P2-SB01-1012	Total/NA	Solid	5030B	
280-55445-C-1-B MS	Matrix Spike	Total/NA	Solid	5030B	
280-55445-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5030B	
LCS 280-226073/2-A	Lab Control Sample	Total/NA	Solid	5030B	
MB 280-226073/1-A	Method Blank	Total/NA	Solid	5030B	

Analysis Batch: 226081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55352-1	P2-SB01-1012	Total/NA	Solid	8260B	226073
280-55445-C-1-B MS	Matrix Spike	Total/NA	Solid	8260B	226073
280-55445-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8260B	226073
LCS 280-226073/2-A	Lab Control Sample	Total/NA	Solid	8260B	226073
MB 280-226073/1-A	Method Blank	Total/NA	Solid	8260B	226073

Prep Batch: 226332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	5030B	
280-55376-B-1-B MS	Matrix Spike	Total/NA	Solid	5030B	
280-55376-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5030B	
LCS 280-226332/2-A	Lab Control Sample	Total/NA	Solid	5030B	
MB 280-226332/1-A	Method Blank	Total/NA	Solid	5030B	

Analysis Batch: 226344

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	8260B	226332
280-55376-B-1-B MS	Matrix Spike	Total/NA	Solid	8260B	226332
280-55376-B-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8260B	226332
LCS 280-226332/2-A	Lab Control Sample	Total/NA	Solid	8260B	226332
MB 280-226332/1-A	Method Blank	Total/NA	Solid	8260B	226332

GC/MS Semi VOA

Prep Batch: 225706

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55352-1	P2-SB01-1012	Total/NA	Solid	3546	
280-55352-1 - DL	P2-SB01-1012	Total/NA	Solid	3546	
280-55352-2 - DL	P2-SBREPLICATE	Total/NA	Solid	3546	
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	3546	
280-55355-A-25-B MS	Matrix Spike	Total/NA	Solid	3546	
280-55355-A-25-C MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	
LCS 280-225706/2-A	Lab Control Sample	Total/NA	Solid	3546	
MB 280-225706/1-A	Method Blank	Total/NA	Solid	3546	

Analysis Batch: 226113

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55352-1	P2-SB01-1012	Total/NA	Solid	8270C SIM	225706
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	8270C SIM	225706
LCS 280-225706/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	225706
MB 280-225706/1-A	Method Blank	Total/NA	Solid	8270C SIM	225706

GC/MS Semi VOA (Continued)

Analysis Batch: 226270

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55352-1 - DL	P2-SB01-1012	Total/NA	Solid	8270C SIM	225706
280-55352-2 - DL	P2-SBREPLICATE	Total/NA	Solid	8270C SIM	225706
280-55355-A-25-B MS	Matrix Spike	Total/NA	Solid	8270C SIM	225706
280-55355-A-25-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8270C SIM	225706

GC VOA

Prep Batch: 225555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55336-C-1-B MS	Matrix Spike	Total/NA	Solid	5030B	
280-55336-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	5030B	
280-55352-1	P2-SB01-1012	Total/NA	Solid	5030B	
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	5030B	
LCS 280-225555/2-A	Lab Control Sample	Total/NA	Solid	5030B	
LCSD 280-225555/3-A	Lab Control Sample Dup	Total/NA	Solid	5030B	
MB 280-225555/1-A	Method Blank	Total/NA	Solid	5030B	

Analysis Batch: 225792

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55336-C-1-B MS	Matrix Spike	Total/NA	Solid	8015B	225555
280-55336-C-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	225555
280-55352-1	P2-SB01-1012	Total/NA	Solid	8015B	225555
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	8015B	225555
LCS 280-225555/2-A	Lab Control Sample	Total/NA	Solid	8015B	225555
LCSD 280-225555/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B	225555
MB 280-225555/1-A	Method Blank	Total/NA	Solid	8015B	225555

GC Semi VOA

Prep Batch: 225630

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55336-A-1-B MS	Matrix Spike	Total/NA	Solid	3546	
280-55336-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	
280-55352-1	P2-SB01-1012	Total/NA	Solid	3546	
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	3546	
LCS 280-225630/2-A	Lab Control Sample	Total/NA	Solid	3546	
MB 280-225630/1-A	Method Blank	Total/NA	Solid	3546	

Analysis Batch: 225901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55336-A-1-B MS	Matrix Spike	Total/NA	Solid	8015B	225630
280-55336-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	225630
280-55352-1	P2-SB01-1012	Total/NA	Solid	8015B	225630
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	8015B	225630
LCS 280-225630/2-A	Lab Control Sample	Total/NA	Solid	8015B	225630
MB 280-225630/1-A	Method Blank	Total/NA	Solid	8015B	225630

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: Terracon - Perry Street II

TestAmerica Job ID: 280-55352-1

General Chemistry

Analysis Batch: 225752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55074-C-2 DU	Duplicate	Total/NA	Solid	Moisture	
280-55124-C-4 DU	Duplicate	Total/NA	Solid	Moisture	
280-55352-1	P2-SB01-1012	Total/NA	Solid	Moisture	
280-55352-2	P2-SBREPLICATE	Total/NA	Solid	Moisture	

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 280-226073/1-A
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226073

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	7.11	J	20	5.4	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Benzene	ND		5.0	0.47	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Bromoform	ND		5.0	0.23	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Bromomethane	ND		10	0.50	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
2-Butanone (MEK)	ND		20	1.8	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Carbon disulfide	ND		5.0	0.42	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Carbon tetrachloride	ND		5.0	0.63	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Chlorobenzene	ND		5.0	0.54	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Chlorobromomethane	ND		5.0	0.30	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Chlorodibromomethane	ND		5.0	0.57	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Chloroethane	ND		10	0.89	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Chloroform	ND		10	0.29	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Chloromethane	ND		10	0.77	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
cis-1,2-Dichloroethene	ND		2.5	0.56	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
cis-1,3-Dichloropropene	ND		5.0	1.3	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Cyclohexane	ND		5.0	0.40	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,2-Dibromo-3-Chloropropane	ND		10	0.60	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,2-Dibromoethane	ND		5.0	0.52	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,2-Dichlorobenzene	ND		5.0	0.45	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,3-Dichlorobenzene	ND		5.0	0.48	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,4-Dichlorobenzene	ND		5.0	0.78	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Dichlorobromomethane	ND		5.0	0.22	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Dichlorodifluoromethane	ND		10	0.52	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,1-Dichloroethane	ND		5.0	0.21	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,2-Dichloroethane	ND		5.0	0.70	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,1-Dichloroethene	ND		5.0	0.59	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,2-Dichloropropane	ND		5.0	0.55	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,4-Dioxane	ND		500	56	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Ethylbenzene	ND		5.0	0.67	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
2-Hexanone	ND		20	4.9	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Isopropylbenzene	ND		5.0	0.59	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Methyl acetate	ND		10	2.8	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Methylcyclohexane	ND		5.0	0.42	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Methylene Chloride	ND		5.0	1.6	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
4-Methyl-2-pentanone (MIBK)	ND		20	4.4	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Methyl tert-butyl ether	ND		20	0.34	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
m-Xylene & p-Xylene	ND		2.5	1.0	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
o-Xylene	ND		2.5	0.61	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Styrene	ND		5.0	0.63	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,1,2,2-Tetrachloroethane	ND		5.0	0.61	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Tetrachloroethene	ND		5.0	0.59	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Toluene	ND		5.0	0.69	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
trans-1,2-Dichloroethene	ND		2.5	0.39	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
trans-1,3-Dichloropropene	ND		5.0	0.67	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,2,3-Trichlorobenzene	ND		5.0	0.75	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,2,4-Trichlorobenzene	ND		5.0	0.73	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,1,1-Trichloroethane	ND		5.0	0.52	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,1,2-Trichloroethane	ND		5.0	0.88	ug/Kg		05/15/14 14:00	05/15/14 20:10	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 280-226073/1-A
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226073

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		5.0	0.23	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Trichlorofluoromethane	ND		10	1.0	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
1,1,2-Trichlorotrifluoroethane	ND		20	0.45	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Vinyl chloride	ND		5.0	1.3	ug/Kg		05/15/14 14:00	05/15/14 20:10	1
Xylenes, (Total)	ND		3.5	1.2	ug/Kg		05/15/14 14:00	05/15/14 20:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*58 - 140*	*05/15/14 14:00*	*05/15/14 20:10*	*1*
4-Bromofluorobenzene (Surr)	*93*		*76 - 127*	*05/15/14 14:00*	*05/15/14 20:10*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 121*	*05/15/14 14:00*	*05/15/14 20:10*	*1*
Toluene-d8 (Surr)	*102*		*80 - 126*	*05/15/14 14:00*	*05/15/14 20:10*	*1*

Lab Sample ID: LCS 280-226073/2-A
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226073

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	200	188		ug/Kg		94	65 - 150
Benzene	50.0	53.6		ug/Kg		107	75 - 135
Bromoform	50.0	52.5		ug/Kg		105	77 - 135
Bromomethane	50.0	50.0		ug/Kg		100	52 - 135
2-Butanone (MEK)	200	229		ug/Kg		114	45 - 177
Carbon disulfide	50.0	56.2		ug/Kg		112	45 - 150
Carbon tetrachloride	50.0	58.6		ug/Kg		117	69 - 138
Chlorobenzene	50.0	52.7		ug/Kg		105	78 - 135
Chlorobromomethane	50.0	51.7		ug/Kg		103	74 - 135
Chlorodibromomethane	50.0	55.1		ug/Kg		110	77 - 135
Chloroethane	50.0	51.9		ug/Kg		104	51 - 145
Chloroform	50.0	56.4		ug/Kg		113	73 - 123
Chloromethane	50.0	54.1		ug/Kg		108	41 - 138
cis-1,2-Dichloroethene	50.0	52.3		ug/Kg		105	76 - 135
cis-1,3-Dichloropropene	50.0	53.5		ug/Kg		107	71 - 135
1,2-Dibromo-3-Chloropropane	50.0	51.5		ug/Kg		103	66 - 150
1,2-Dibromoethane	50.0	50.1		ug/Kg		100	76 - 135
1,2-Dichlorobenzene	50.0	54.5		ug/Kg		109	73 - 135
1,3-Dichlorobenzene	50.0	54.7		ug/Kg		109	69 - 135
1,4-Dichlorobenzene	50.0	54.7		ug/Kg		109	73 - 135
Dichlorobromomethane	50.0	54.8		ug/Kg		110	73 - 135
Dichlorodifluoromethane	50.0	52.4		ug/Kg		105	32 - 152
1,1-Dichloroethane	50.0	52.3		ug/Kg		105	70 - 135
1,2-Dichloroethane	50.0	57.9		ug/Kg		116	69 - 135
1,1-Dichloroethene	50.0	52.7		ug/Kg		105	79 - 135
1,2-Dichloropropane	50.0	51.8		ug/Kg		104	72 - 121
Ethylbenzene	50.0	52.8		ug/Kg		106	73 - 125
2-Hexanone	200	187		ug/Kg		94	67 - 150
Isopropylbenzene	50.0	55.5		ug/Kg		111	74 - 137
Methylene Chloride	50.0	52.6		ug/Kg		105	76 - 136
4-Methyl-2-pentanone (MIBK)	200	201		ug/Kg		101	69 - 150

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 280-226073/2-A
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226073

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	50.0	54.1		ug/Kg		108	71 - 141
m-Xylene & p-Xylene	50.0	52.2		ug/Kg		104	77 - 135
o-Xylene	50.0	51.6		ug/Kg		103	75 - 135
Styrene	50.0	53.9		ug/Kg		108	76 - 135
1,1,2,2-Tetrachloroethane	50.0	51.0		ug/Kg		102	65 - 135
Tetrachloroethene	50.0	52.1		ug/Kg		104	76 - 135
Toluene	50.0	52.0		ug/Kg		104	77 - 122
trans-1,2-Dichloroethene	50.0	55.2		ug/Kg		110	77 - 135
trans-1,3-Dichloropropene	50.0	53.6		ug/Kg		107	71 - 135
1,2,3-Trichlorobenzene	50.0	57.1		ug/Kg		114	62 - 135
1,2,4-Trichlorobenzene	50.0	58.5		ug/Kg		117	65 - 135
1,1,1-Trichloroethane	50.0	56.3		ug/Kg		113	70 - 135
1,1,2-Trichloroethane	50.0	49.9		ug/Kg		100	78 - 135
Trichloroethene	50.0	53.7		ug/Kg		107	77 - 135
Trichlorofluoromethane	50.0	54.7		ug/Kg		109	48 - 150
Vinyl chloride	50.0	54.1		ug/Kg		108	43 - 145

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*58 - 140*
4-Bromofluorobenzene (Surr)	*93*		*76 - 127*
Dibromofluoromethane (Surr)	*98*		*75 - 121*
Toluene-d8 (Surr)	*98*		*80 - 126*

Lab Sample ID: 280-55445-C-1-B MS
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 226073

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	ND		248	187		ug/Kg	☼	76	65 - 150
Benzene	ND		61.9	57.3		ug/Kg	☼	92	75 - 135
Bromoform	ND		61.9	52.8		ug/Kg	☼	85	77 - 135
Bromomethane	ND		61.9	49.9		ug/Kg	☼	81	52 - 135
2-Butanone (MEK)	ND		248	316		ug/Kg	☼	128	45 - 177
Carbon disulfide	ND		61.9	57.1		ug/Kg	☼	92	45 - 150
Carbon tetrachloride	ND		61.9	59.1		ug/Kg	☼	95	69 - 138
Chlorobenzene	ND		61.9	54.8		ug/Kg	☼	88	78 - 135
Chlorobromomethane	ND		61.9	55.3		ug/Kg	☼	89	74 - 135
Chlorodibromomethane	ND		61.9	56.9		ug/Kg	☼	92	77 - 135
Chloroethane	ND		61.9	51.8		ug/Kg	☼	84	51 - 145
Chloroform	ND		61.9	58.6		ug/Kg	☼	95	73 - 123
Chloromethane	ND		61.9	44.5		ug/Kg	☼	72	41 - 138
cis-1,2-Dichloroethene	ND		61.9	56.5		ug/Kg	☼	91	76 - 135
cis-1,3-Dichloropropene	ND		61.9	57.0		ug/Kg	☼	92	71 - 135
1,2-Dibromo-3-Chloropropane	ND		61.9	50.4		ug/Kg	☼	81	66 - 150
1,2-Dibromoethane	ND		61.9	53.1		ug/Kg	☼	86	76 - 135
1,2-Dichlorobenzene	ND		61.9	55.8		ug/Kg	☼	90	73 - 135
1,3-Dichlorobenzene	ND		61.9	54.8		ug/Kg	☼	89	69 - 135
1,4-Dichlorobenzene	ND		61.9	54.7		ug/Kg	☼	88	73 - 135

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-55445-C-1-B MS
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 226073

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorobromomethane	ND		61.9	56.1		ug/Kg	☼	91	73 - 135
Dichlorodifluoromethane	ND		61.9	48.5		ug/Kg	☼	78	32 - 152
1,1-Dichloroethane	ND		61.9	61.1		ug/Kg	☼	99	70 - 135
1,2-Dichloroethane	ND		61.9	57.2		ug/Kg	☼	92	69 - 135
1,1-Dichloroethene	ND		61.9	55.9		ug/Kg	☼	90	79 - 135
1,2-Dichloropropane	ND		61.9	54.9		ug/Kg	☼	89	72 - 121
Ethylbenzene	ND		61.9	57.0		ug/Kg	☼	92	73 - 125
2-Hexanone	ND		248	188		ug/Kg	☼	76	67 - 150
Isopropylbenzene	ND		61.9	62.8		ug/Kg	☼	102	74 - 137
Methylene Chloride	ND		61.9	56.8		ug/Kg	☼	92	76 - 136
4-Methyl-2-pentanone (MIBK)	ND		248	201		ug/Kg	☼	81	69 - 150
Methyl tert-butyl ether	ND		61.9	54.5		ug/Kg	☼	88	71 - 141
m-Xylene & p-Xylene	ND		61.9	56.7		ug/Kg	☼	92	77 - 135
o-Xylene	ND		61.9	56.3		ug/Kg	☼	91	75 - 135
Styrene	ND		61.9	57.5		ug/Kg	☼	93	76 - 135
1,1,2,2-Tetrachloroethane	ND		61.9	54.9		ug/Kg	☼	89	65 - 135
Tetrachloroethene	ND		61.9	56.3		ug/Kg	☼	91	76 - 135
Toluene	ND		61.9	54.0		ug/Kg	☼	87	77 - 122
trans-1,2-Dichloroethene	ND		61.9	58.1		ug/Kg	☼	94	77 - 135
trans-1,3-Dichloropropene	ND		61.9	52.5		ug/Kg	☼	85	71 - 135
1,2,3-Trichlorobenzene	ND		61.9	44.3		ug/Kg	☼	72	62 - 135
1,2,4-Trichlorobenzene	ND		61.9	47.3		ug/Kg	☼	76	65 - 135
1,1,1-Trichloroethane	ND		61.9	56.5		ug/Kg	☼	91	70 - 135
1,1,2-Trichloroethane	ND		61.9	50.8		ug/Kg	☼	82	78 - 135
Trichloroethene	ND		61.9	58.0		ug/Kg	☼	94	77 - 135
Trichlorofluoromethane	ND		61.9	48.3		ug/Kg	☼	78	48 - 150
Vinyl chloride	ND		61.9	49.9		ug/Kg	☼	81	43 - 145

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*58 - 140*
4-Bromofluorobenzene (Surr)	*98*		*76 - 127*
Dibromofluoromethane (Surr)	*95*		*75 - 121*
Toluene-d8 (Surr)	*99*		*80 - 126*

Lab Sample ID: 280-55445-C-1-C MSD
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 226073

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	ND		222	180		ug/Kg	☼	81	65 - 150	4	28
Benzene	ND		55.5	55.3		ug/Kg	☼	100	75 - 135	3	20
Bromoform	ND		55.5	50.3		ug/Kg	☼	91	77 - 135	5	20
Bromomethane	ND		55.5	47.2		ug/Kg	☼	85	52 - 135	6	22
2-Butanone (MEK)	ND		222	326		ug/Kg	☼	147	45 - 177	3	32
Carbon disulfide	ND		55.5	55.7		ug/Kg	☼	100	45 - 150	2	24
Carbon tetrachloride	ND		55.5	57.3		ug/Kg	☼	103	69 - 138	3	20
Chlorobenzene	ND		55.5	51.3		ug/Kg	☼	92	78 - 135	7	20
Chlorobromomethane	ND		55.5	54.1		ug/Kg	☼	97	74 - 135	2	21

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-55445-C-1-C MSD
Matrix: Solid
Analysis Batch: 226081

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 226073

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorodibromomethane	ND		55.5	54.8		ug/Kg	☼	99	77 - 135	4	20
Chloroethane	ND		55.5	48.8		ug/Kg	☼	88	51 - 145	6	22
Chloroform	ND		55.5	56.6		ug/Kg	☼	102	73 - 123	3	20
Chloromethane	ND		55.5	41.0		ug/Kg	☼	74	41 - 138	8	25
cis-1,2-Dichloroethene	ND		55.5	54.1		ug/Kg	☼	97	76 - 135	4	20
cis-1,3-Dichloropropene	ND		55.5	54.2		ug/Kg	☼	98	71 - 135	5	20
1,2-Dibromo-3-Chloropropane	ND		55.5	50.6		ug/Kg	☼	91	66 - 150	0	28
1,2-Dibromoethane	ND		55.5	50.9		ug/Kg	☼	92	76 - 135	4	20
1,2-Dichlorobenzene	ND		55.5	50.3		ug/Kg	☼	91	73 - 135	10	20
1,3-Dichlorobenzene	ND		55.5	49.0		ug/Kg	☼	88	69 - 135	11	20
1,4-Dichlorobenzene	ND		55.5	49.2		ug/Kg	☼	89	73 - 135	10	22
Dichlorobromomethane	ND		55.5	54.3		ug/Kg	☼	98	73 - 135	3	20
Dichlorodifluoromethane	ND		55.5	46.6		ug/Kg	☼	84	32 - 152	4	28
1,1-Dichloroethane	ND		55.5	58.8		ug/Kg	☼	106	70 - 135	4	20
1,2-Dichloroethane	ND		55.5	56.1		ug/Kg	☼	101	69 - 135	2	20
1,1-Dichloroethene	ND		55.5	55.3		ug/Kg	☼	100	79 - 135	1	20
1,2-Dichloropropane	ND		55.5	53.0		ug/Kg	☼	95	72 - 121	3	20
Ethylbenzene	ND		55.5	50.9		ug/Kg	☼	92	73 - 125	11	20
2-Hexanone	ND		222	178		ug/Kg	☼	80	67 - 150	6	29
Isopropylbenzene	ND		55.5	56.9		ug/Kg	☼	103	74 - 137	10	20
Methylene Chloride	ND		55.5	55.1		ug/Kg	☼	99	76 - 136	3	21
4-Methyl-2-pentanone (MIBK)	ND		222	195		ug/Kg	☼	88	69 - 150	3	25
Methyl tert-butyl ether	ND		55.5	53.8		ug/Kg	☼	97	71 - 141	1	20
m-Xylene & p-Xylene	ND		55.5	51.6		ug/Kg	☼	93	77 - 135	9	20
o-Xylene	ND		55.5	52.0		ug/Kg	☼	94	75 - 135	8	20
Styrene	ND		55.5	52.8		ug/Kg	☼	95	76 - 135	9	20
1,1,2,2-Tetrachloroethane	ND		55.5	53.4		ug/Kg	☼	96	65 - 135	3	21
Tetrachloroethene	ND		55.5	52.2		ug/Kg	☼	94	76 - 135	8	20
Toluene	ND		55.5	52.6		ug/Kg	☼	95	77 - 122	3	20
trans-1,2-Dichloroethene	ND		55.5	55.7		ug/Kg	☼	100	77 - 135	4	20
trans-1,3-Dichloropropene	ND		55.5	51.0		ug/Kg	☼	92	71 - 135	3	20
1,2,3-Trichlorobenzene	ND		55.5	41.9		ug/Kg	☼	76	62 - 135	6	31
1,2,4-Trichlorobenzene	ND		55.5	43.4		ug/Kg	☼	78	65 - 135	8	26
1,1,1-Trichloroethane	ND		55.5	55.6		ug/Kg	☼	100	70 - 135	2	20
1,1,2-Trichloroethane	ND		55.5	49.2		ug/Kg	☼	89	78 - 135	3	20
Trichloroethene	ND		55.5	56.3		ug/Kg	☼	101	77 - 135	3	20
Trichlorofluoromethane	ND		55.5	47.4		ug/Kg	☼	85	48 - 150	2	33
Vinyl chloride	ND		55.5	47.9		ug/Kg	☼	86	43 - 145	4	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*58 - 140*
4-Bromofluorobenzene (Surr)	*104*		*76 - 127*
Dibromofluoromethane (Surr)	*101*		*75 - 121*
Toluene-d8 (Surr)	*102*		*80 - 126*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 280-226332/1-A
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226332

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		1000	400	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Benzene	ND		250	45	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Bromoform	ND		250	160	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Bromomethane	ND		500	47	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
2-Butanone (MEK)	ND		1000	290	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Carbon disulfide	ND		250	64	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Carbon tetrachloride	ND		250	17	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Chlorobenzene	ND		250	30	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Chlorobromomethane	ND		250	47	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Chlorodibromomethane	ND		250	33	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Chloroethane	ND		500	44	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Chloroform	ND		250	46	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Chloromethane	ND		500	50	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
cis-1,2-Dichloroethene	ND		120	22	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
cis-1,3-Dichloropropene	ND		250	27	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Cyclohexane	ND		250	28	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,2-Dibromo-3-Chloropropane	ND		500	86	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,2-Dibromoethane	ND		250	25	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,2-Dichlorobenzene	ND		250	93	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,3-Dichlorobenzene	ND		250	41	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,4-Dichlorobenzene	ND		250	25	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Dichlorobromomethane	ND		250	39	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Dichlorodifluoromethane	ND		500	22	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,1-Dichloroethane	ND		250	50	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,2-Dichloroethane	ND		250	25	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,1-Dichloroethene	ND		250	50	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,2-Dichloropropane	ND		250	46	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,4-Dioxane	ND		25000	2500	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Ethylbenzene	ND		250	34	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
2-Hexanone	ND		1000	220	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Isopropylbenzene	ND		250	29	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Methyl acetate	ND		1000	240	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Methylcyclohexane	ND		250	42	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Methylene Chloride	ND		250	69	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
4-Methyl-2-pentanone (MIBK)	ND		1000	220	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Methyl tert-butyl ether	ND		250	50	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
m-Xylene & p-Xylene	ND		250	78	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
o-Xylene	ND		120	35	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Styrene	ND		250	26	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,1,2,2-Tetrachloroethane	ND		250	29	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Tetrachloroethene	ND		250	27	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Toluene	ND		250	39	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
trans-1,2-Dichloroethene	ND		120	45	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
trans-1,3-Dichloropropene	ND		250	41	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,2,3-Trichlorobenzene	ND		250	35	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,2,4-Trichlorobenzene	ND		250	47	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,1,1-Trichloroethane	ND		250	20	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,1,2-Trichloroethane	ND		250	27	ug/Kg		05/19/14 07:54	05/19/14 11:34	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 280-226332/1-A
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 226332

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		250	23	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Trichlorofluoromethane	ND		500	50	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
1,1,2-Trichlorotrifluoroethane	ND		1000	66	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Vinyl chloride	ND		500	27	ug/Kg		05/19/14 07:54	05/19/14 11:34	1
Xylenes, (Total)	ND		280	85	ug/Kg		05/19/14 07:54	05/19/14 11:34	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*86*		*50 - 139*	*05/19/14 07:54*	*05/19/14 11:34*	*1*
4-Bromofluorobenzene (Surr)	*114*		*62 - 133*	*05/19/14 07:54*	*05/19/14 11:34*	*1*
Dibromofluoromethane (Surr)	*96*		*60 - 133*	*05/19/14 07:54*	*05/19/14 11:34*	*1*
Toluene-d8 (Surr)	*118*		*68 - 143*	*05/19/14 07:54*	*05/19/14 11:34*	*1*

Lab Sample ID: LCS 280-226332/2-A
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226332

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	8000	7100		ug/Kg		89	45 - 150
Benzene	2000	2110		ug/Kg		106	78 - 135
Bromoform	2000	2000		ug/Kg		100	64 - 137
Bromomethane	2000	2110		ug/Kg		106	11 - 179
2-Butanone (MEK)	8000	6870		ug/Kg		86	39 - 151
Carbon disulfide	2000	2040		ug/Kg		102	54 - 150
Carbon tetrachloride	2000	2210		ug/Kg		111	75 - 135
Chlorobenzene	2000	2000		ug/Kg		100	82 - 135
Chlorobromomethane	2000	2170		ug/Kg		108	78 - 135
Chlorodibromomethane	2000	2080		ug/Kg		104	78 - 135
Chloroethane	2000	1580		ug/Kg		79	30 - 159
Chloroform	2000	2040		ug/Kg		102	78 - 121
Chloromethane	2000	1330		ug/Kg		66	22 - 140
cis-1,2-Dichloroethene	2000	2110		ug/Kg		106	81 - 135
cis-1,3-Dichloropropene	2000	2240		ug/Kg		112	74 - 135
1,2-Dibromo-3-Chloropropane	2000	1810		ug/Kg		90	62 - 150
1,2-Dibromoethane	2000	1950		ug/Kg		98	78 - 135
1,2-Dichlorobenzene	2000	1890		ug/Kg		95	83 - 135
1,3-Dichlorobenzene	2000	1890		ug/Kg		95	81 - 135
1,4-Dichlorobenzene	2000	1930		ug/Kg		97	81 - 135
Dichlorobromomethane	2000	2070		ug/Kg		103	75 - 135
Dichlorodifluoromethane	2000	2060		ug/Kg		103	6 - 150
1,1-Dichloroethane	2000	2140		ug/Kg		107	75 - 135
1,2-Dichloroethane	2000	1970		ug/Kg		98	68 - 135
1,1-Dichloroethene	2000	1960		ug/Kg		98	74 - 136
1,2-Dichloropropane	2000	2150		ug/Kg		108	72 - 125
Ethylbenzene	2000	2050		ug/Kg		103	77 - 128
2-Hexanone	8000	7210		ug/Kg		90	47 - 154
Isopropylbenzene	2000	2030		ug/Kg		101	81 - 141
Methylene Chloride	2000	2110		ug/Kg		105	64 - 147
4-Methyl-2-pentanone (MIBK)	8000	7600		ug/Kg		95	51 - 154

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 280-226332/2-A
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 226332

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	2000	1980		ug/Kg		99	56 - 140
m-Xylene & p-Xylene	2000	2020		ug/Kg		101	77 - 135
o-Xylene	2000	2070		ug/Kg		103	78 - 135
Styrene	2000	2130		ug/Kg		106	75 - 138
1,1,2,2-Tetrachloroethane	2000	2000		ug/Kg		100	72 - 135
Tetrachloroethene	2000	1990		ug/Kg		100	77 - 135
Toluene	2000	2240		ug/Kg		112	83 - 120
trans-1,2-Dichloroethene	2000	2150		ug/Kg		107	79 - 135
trans-1,3-Dichloropropene	2000	2180		ug/Kg		109	74 - 135
1,2,3-Trichlorobenzene	2000	1860		ug/Kg		93	75 - 135
1,2,4-Trichlorobenzene	2000	1880		ug/Kg		94	77 - 135
1,1,1-Trichloroethane	2000	2140		ug/Kg		107	78 - 135
1,1,2-Trichloroethane	2000	2090		ug/Kg		105	79 - 135
Trichloroethene	2000	2110		ug/Kg		106	82 - 135
Trichlorofluoromethane	2000	2350		ug/Kg		117	33 - 150
Vinyl chloride	2000	1700		ug/Kg		85	28 - 142

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*80*		*50 - 139*
4-Bromofluorobenzene (Surr)	*102*		*62 - 133*
Dibromofluoromethane (Surr)	*91*		*60 - 133*
Toluene-d8 (Surr)	*105*		*68 - 143*

Lab Sample ID: 280-55376-B-1-B MS
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 226332

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	ND		8000	6560		ug/Kg		82	45 - 150
Benzene	ND		2000	1760		ug/Kg		88	78 - 135
Bromoform	ND		2000	1770		ug/Kg		89	64 - 137
Bromomethane	ND		2000	1520		ug/Kg		76	11 - 179
2-Butanone (MEK)	ND		8000	6520		ug/Kg		82	39 - 151
Carbon disulfide	ND		2000	227	J F1	ug/Kg		11	54 - 150
Carbon tetrachloride	ND		2000	1650		ug/Kg		82	75 - 135
Chlorobenzene	ND		2000	1650		ug/Kg		82	82 - 135
Chlorobromomethane	ND		2000	1890		ug/Kg		95	78 - 135
Chlorodibromomethane	ND		2000	1770		ug/Kg		89	78 - 135
Chloroethane	ND		2000	1170		ug/Kg		59	30 - 159
Chloroform	ND		2000	1710		ug/Kg		85	78 - 121
Chloromethane	ND		2000	905		ug/Kg		45	22 - 140
cis-1,2-Dichloroethene	ND		2000	1810		ug/Kg		90	81 - 135
cis-1,3-Dichloropropene	ND		2000	1880		ug/Kg		94	74 - 135
1,2-Dibromo-3-Chloropropane	ND		2000	1790		ug/Kg		90	62 - 150
1,2-Dibromoethane	ND		2000	1730		ug/Kg		86	78 - 135
1,2-Dichlorobenzene	ND		2000	1600	F1	ug/Kg		80	83 - 135
1,3-Dichlorobenzene	ND		2000	1490	F1	ug/Kg		74	81 - 135
1,4-Dichlorobenzene	ND		2000	1560	F1	ug/Kg		78	81 - 135

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-55376-B-1-B MS
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 226332

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorobromomethane	ND		2000	1740		ug/Kg		87	75 - 135
Dichlorodifluoromethane	ND		2000	1140		ug/Kg		57	6 - 150
1,1-Dichloroethane	ND		2000	1700		ug/Kg		85	75 - 135
1,2-Dichloroethane	ND		2000	1690		ug/Kg		84	68 - 135
1,1-Dichloroethene	ND		2000	1710		ug/Kg		86	74 - 136
1,2-Dichloropropane	ND		2000	1780		ug/Kg		89	72 - 125
Ethylbenzene	ND		2000	1580		ug/Kg		79	77 - 128
2-Hexanone	ND		8000	6480		ug/Kg		81	47 - 154
Isopropylbenzene	ND		2000	1570	F1	ug/Kg		79	81 - 141
Methylene Chloride	ND		2000	1810		ug/Kg		91	64 - 147
4-Methyl-2-pentanone (MIBK)	ND		8000	7200		ug/Kg		90	51 - 154
Methyl tert-butyl ether	ND		2000	1790		ug/Kg		90	56 - 140
m-Xylene & p-Xylene	ND		2000	1620		ug/Kg		81	77 - 135
o-Xylene	ND		2000	1610		ug/Kg		81	78 - 135
Styrene	ND		2000	1730		ug/Kg		87	75 - 138
1,1,2,2-Tetrachloroethane	ND		2000	40.0	J F1	ug/Kg		2	72 - 135
Tetrachloroethene	580		2000	1580	F1	ug/Kg		50	77 - 135
Toluene	ND		2000	1850		ug/Kg		92	83 - 120
trans-1,2-Dichloroethene	ND		2000	1730		ug/Kg		86	79 - 135
trans-1,3-Dichloropropene	ND		2000	1850		ug/Kg		93	74 - 135
1,2,3-Trichlorobenzene	ND		2000	1650		ug/Kg		83	75 - 135
1,2,4-Trichlorobenzene	56	J	2000	1610		ug/Kg		78	77 - 135
1,1,1-Trichloroethane	ND		2000	1690		ug/Kg		84	78 - 135
1,1,2-Trichloroethane	ND		2000	1750		ug/Kg		88	79 - 135
Trichloroethene	71	J	2000	3120	F1	ug/Kg		153	82 - 135
Trichlorofluoromethane	ND		2000	1670		ug/Kg		84	33 - 150
Vinyl chloride	ND		2000	1210		ug/Kg		60	28 - 142

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*71*		*50 - 139*
4-Bromofluorobenzene (Surr)	*86*		*62 - 133*
Dibromofluoromethane (Surr)	*49*	*X*	*60 - 133*
Toluene-d8 (Surr)	*85*		*68 - 143*

Lab Sample ID: 280-55376-B-1-C MSD
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 226332

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	ND		7890	6300		ug/Kg		80	45 - 150	4	59
Benzene	ND		1970	1650		ug/Kg		84	78 - 135	6	20
Bromoform	ND		1970	1750		ug/Kg		89	64 - 137	1	35
Bromomethane	ND		1970	1480		ug/Kg		75	11 - 179	3	37
2-Butanone (MEK)	ND		7890	6280		ug/Kg		80	39 - 151	4	55
Carbon disulfide	ND		1970	218	J F1	ug/Kg		11	54 - 150	4	23
Carbon tetrachloride	ND		1970	1510		ug/Kg		76	75 - 135	9	21
Chlorobenzene	ND		1970	1540	F1	ug/Kg		78	82 - 135	7	20
Chlorobromomethane	ND		1970	1840		ug/Kg		93	78 - 135	3	26

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-55376-B-1-C MSD
Matrix: Solid
Analysis Batch: 226344

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 226332

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorodibromomethane	ND		1970	1750		ug/Kg		89	78 - 135	2	27
Chloroethane	ND		1970	1180		ug/Kg		60	30 - 159	1	35
Chloroform	ND		1970	1600		ug/Kg		81	78 - 121	7	20
Chloromethane	ND		1970	972		ug/Kg		49	22 - 140	7	32
cis-1,2-Dichloroethene	ND		1970	1730		ug/Kg		88	81 - 135	5	25
cis-1,3-Dichloropropene	ND		1970	1840		ug/Kg		93	74 - 135	3	21
1,2-Dibromo-3-Chloropropane	ND		1970	1380		ug/Kg		70	62 - 150	26	31
1,2-Dibromoethane	ND		1970	1750		ug/Kg		89	78 - 135	1	36
1,2-Dichlorobenzene	ND		1970	1500	F1	ug/Kg		76	83 - 135	7	20
1,3-Dichlorobenzene	ND		1970	1420	F1	ug/Kg		72	81 - 135	4	20
1,4-Dichlorobenzene	ND		1970	1470	F1	ug/Kg		74	81 - 135	6	20
Dichlorobromomethane	ND		1970	1650		ug/Kg		84	75 - 135	5	23
Dichlorodifluoromethane	ND		1970	1070		ug/Kg		54	6 - 150	7	33
1,1-Dichloroethane	ND		1970	1640		ug/Kg		83	75 - 135	4	25
1,2-Dichloroethane	ND		1970	1600		ug/Kg		81	68 - 135	5	25
1,1-Dichloroethene	ND		1970	1600		ug/Kg		81	74 - 136	7	29
1,2-Dichloropropane	ND		1970	1740		ug/Kg		88	72 - 125	2	22
Ethylbenzene	ND		1970	1520		ug/Kg		77	77 - 128	4	20
2-Hexanone	ND		7890	6470		ug/Kg		82	47 - 154	0	51
Isopropylbenzene	ND		1970	1490	F1	ug/Kg		75	81 - 141	6	22
Methylene Chloride	ND		1970	1690		ug/Kg		86	64 - 147	7	22
4-Methyl-2-pentanone (MIBK)	ND		7890	7010		ug/Kg		89	51 - 154	3	43
Methyl tert-butyl ether	ND		1970	1780		ug/Kg		90	56 - 140	1	33
m-Xylene & p-Xylene	ND		1970	1510	F1	ug/Kg		76	77 - 135	7	23
o-Xylene	ND		1970	1550		ug/Kg		79	78 - 135	4	20
Styrene	ND		1970	1680		ug/Kg		85	75 - 138	3	20
1,1,2,2-Tetrachloroethane	ND		1970	36.8	J F1	ug/Kg		2	72 - 135	8	34
Tetrachloroethene	580		1970	1560	F1	ug/Kg		50	77 - 135	1	20
Toluene	ND		1970	1760		ug/Kg		89	83 - 120	5	20
trans-1,2-Dichloroethene	ND		1970	1630		ug/Kg		82	79 - 135	6	25
trans-1,3-Dichloropropene	ND		1970	1800		ug/Kg		91	74 - 135	3	24
1,2,3-Trichlorobenzene	ND		1970	1480		ug/Kg		75	75 - 135	11	22
1,2,4-Trichlorobenzene	56	J	1970	1480	F1	ug/Kg		72	77 - 135	9	20
1,1,1-Trichloroethane	ND		1970	1550		ug/Kg		78	78 - 135	9	20
1,1,2-Trichloroethane	ND		1970	1670		ug/Kg		84	79 - 135	5	26
Trichloroethene	71	J	1970	2950	F1	ug/Kg		146	82 - 135	6	20
Trichlorofluoromethane	ND		1970	1540		ug/Kg		78	33 - 150	8	28
Vinyl chloride	ND		1970	1230		ug/Kg		62	28 - 142	2	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*67*		*50 - 139*
4-Bromofluorobenzene (Surr)	*85*		*62 - 133*
Dibromofluoromethane (Surr)	*44*	*X*	*60 - 133*
Toluene-d8 (Surr)	*83*		*68 - 143*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 280-225706/1-A
Matrix: Solid
Analysis Batch: 226113

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225706

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		5000	160	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Acenaphthylene	ND		5000	170	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Anthracene	ND		5000	720	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Benzo[a]anthracene	ND		5000	890	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Benzo[a]pyrene	ND		5000	740	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Benzo[b]fluoranthene	ND		5000	1200	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Benzo[g,h,i]perylene	ND		5000	1100	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Benzo[k]fluoranthene	ND		5000	990	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Chrysene	ND		5000	990	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Dibenz(a,h)anthracene	ND		5000	1300	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Fluoranthene	ND		5000	990	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Fluorene	ND		5000	470	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Indeno[1,2,3-cd]pyrene	ND		5000	1100	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
2-Methylnaphthalene	ND		5000	310	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Naphthalene	ND		5000	320	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Phenanthrene	ND		5000	1100	ng/Kg		05/14/14 12:27	05/16/14 15:13	1
Pyrene	ND		5000	1100	ng/Kg		05/14/14 12:27	05/16/14 15:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*88*		*39 - 120*	*05/14/14 12:27*	*05/16/14 15:13*	*1*
Nitrobenzene-d5	*91*		*42 - 120*	*05/14/14 12:27*	*05/16/14 15:13*	*1*
Terphenyl-d14	*77*		*35 - 124*	*05/14/14 12:27*	*05/16/14 15:13*	*1*

Lab Sample ID: LCS 280-225706/2-A
Matrix: Solid
Analysis Batch: 226113

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225706

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	29000	28000		ng/Kg		96	35 - 120
Acenaphthylene	29000	28000		ng/Kg		96	41 - 120
Anthracene	29000	25500		ng/Kg		88	43 - 120
Benzo[a]anthracene	29000	26400		ng/Kg		91	36 - 120
Benzo[a]pyrene	29000	19700		ng/Kg		68	20 - 120
Benzo[b]fluoranthene	29000	27300		ng/Kg		94	37 - 120
Benzo[g,h,i]perylene	29000	30800		ng/Kg		106	20 - 123
Benzo[k]fluoranthene	29000	27500		ng/Kg		95	46 - 120
Chrysene	29000	27000		ng/Kg		93	34 - 120
Dibenz(a,h)anthracene	29000	29600		ng/Kg		102	20 - 120
Fluoranthene	29000	24400		ng/Kg		84	45 - 120
Fluorene	29000	26900		ng/Kg		93	44 - 120
Indeno[1,2,3-cd]pyrene	29000	28700		ng/Kg		99	20 - 127
Naphthalene	29000	30700		ng/Kg		106	44 - 120
Phenanthrene	29000	27200		ng/Kg		94	44 - 120
Pyrene	29000	24500		ng/Kg		84	43 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*91*		*39 - 120*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 280-225706/2-A
Matrix: Solid
Analysis Batch: 226113

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225706

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	*98*		*42 - 120*
Terphenyl-d14	*77*		*35 - 124*

Lab Sample ID: 280-55355-A-25-B MS
Matrix: Solid
Analysis Batch: 226270

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 225706

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	19000		32400	86900	F1	ng/Kg	☼	208	35 - 120
Acenaphthylene	ND		32400	29000		ng/Kg	☼	89	41 - 120
Anthracene	76000		32400	177000	F1	ng/Kg	☼	314	43 - 120
Benzo[a]anthracene	580000	E	32400	1490000	E 4	ng/Kg	☼	2788	36 - 120
Benzo[a]pyrene	850000	E	32400	2140000	E 4	ng/Kg	☼	3992	20 - 120
Benzo[b]fluoranthene	1100000	E	32400	2830000	E 4	ng/Kg	☼	5263	37 - 120
Benzo[g,h,i]perylene	630000	E	32400	1440000	E 4	ng/Kg	☼	2492	20 - 123
Benzo[k]fluoranthene	390000	E	32400	1010000	E 4	ng/Kg	☼	1914	46 - 120
Chrysene	780000	E	32400	1970000	E 4	ng/Kg	☼	3673	34 - 120
Dibenz(a,h)anthracene	170000		32400	432000	E 4	ng/Kg	☼	800	20 - 120
Fluoranthene	830000	E	32400	2030000	E 4	ng/Kg	☼	3697	45 - 120
Fluorene	9800		32400	49000	F1	ng/Kg	☼	121	44 - 120
Indeno[1,2,3-cd]pyrene	650000	E	32400	1590000	E 4	ng/Kg	☼	2889	20 - 127
Naphthalene	9800		32400	65100	F1	ng/Kg	☼	171	44 - 120
Phenanthrene	340000	E	32400	685000	E 4	ng/Kg	☼	1050	44 - 120
Pyrene	770000	E	32400	1960000	E 4	ng/Kg	☼	3656	43 - 120

Surrogate	MS %Recovery	MS Qualifier	Limits
2-Fluorobiphenyl	*80*		*39 - 120*
Nitrobenzene-d5	*98*		*42 - 120*
Terphenyl-d14	*88*		*35 - 124*

Lab Sample ID: 280-55355-A-25-C MSD
Matrix: Solid
Analysis Batch: 226270

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 225706

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	19000		33300	67000	F1	ng/Kg	☼	143	35 - 120	26	50
Acenaphthylene	ND		33300	30900		ng/Kg	☼	93	41 - 120	7	50
Anthracene	76000		33300	155000	F1	ng/Kg	☼	239	43 - 120	13	50
Benzo[a]anthracene	580000	E	33300	1010000	E 4	ng/Kg	☼	1280	36 - 120	38	40
Benzo[a]pyrene	850000	E	33300	1470000	E 4 F2	ng/Kg	☼	1857	20 - 120	37	30
Benzo[b]fluoranthene	1100000	E	33300	1950000	E 4 F2	ng/Kg	☼	2459	37 - 120	37	28
Benzo[g,h,i]perylene	630000	E	33300	1040000	E 4 F2	ng/Kg	☼	1222	20 - 123	32	30
Benzo[k]fluoranthene	390000	E	33300	630000	E 4 F2	ng/Kg	☼	712	46 - 120	47	28
Chrysene	780000	E	33300	1340000	E 4	ng/Kg	☼	1698	34 - 120	38	41
Dibenz(a,h)anthracene	170000		33300	311000	E 4 F2	ng/Kg	☼	416	20 - 120	33	25
Fluoranthene	830000	E	33300	1470000	E 4 F2	ng/Kg	☼	1934	45 - 120	32	30
Fluorene	9800		33300	46100		ng/Kg	☼	109	44 - 120	6	50
Indeno[1,2,3-cd]pyrene	650000	E	33300	1120000	E 4	ng/Kg	☼	1408	20 - 127	35	50

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 280-55355-A-25-C MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 226270 — **Prep Batch: 225706**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	9800		33300	52000	F1	ng/Kg	☼	127	44 - 120	22	50
Phenanthrene	340000	E	33300	589000	E 4	ng/Kg	☼	735	44 - 120	15	42
Pyrene	770000	E	33300	1380000	E 4 F2	ng/Kg	☼	1831	43 - 120	35	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl	*83*		*39 - 120*
Nitrobenzene-d5	*105*		*42 - 120*
Terphenyl-d14	*86*		*35 - 124*

Method: 8015B - Gasoline Range Organics - (GC)

Lab Sample ID: MB 280-225555/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 225792 — **Prep Batch: 225555**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C10)	ND		1.2	0.33	mg/Kg		05/13/14 12:19	05/14/14 16:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
a,a,a-Trifluorotoluene	*100*		*77 - 123*	*05/13/14 12:19*	*05/14/14 16:14*	*1*

Lab Sample ID: LCS 280-225555/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 225792 — **Prep Batch: 225555**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C6-C10)	5.50	5.07		mg/Kg		92	85 - 153

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*82*		*77 - 123*

Lab Sample ID: LCSD 280-225555/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 225792 — **Prep Batch: 225555**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C6-C10)	5.50	5.70		mg/Kg		104	85 - 153	12	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
a,a,a-Trifluorotoluene	*90*		*77 - 123*

Lab Sample ID: 280-55336-C-1-B MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 225792 — **Prep Batch: 225555**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
GRO (C6-C10)	5.2		6.88	13.3		mg/Kg	☼	117	85 - 153

Method: 8015B - Gasoline Range Organics - (GC) (Continued)

Lab Sample ID: 280-55336-C-1-B MS
Matrix: Solid
Analysis Batch: 225792

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 225555

Surrogate	MS %Recovery	MS Qualifier	Limits
a,a,a-Trifluorotoluene	*89*		*77 - 123*

Lab Sample ID: 280-55336-C-1-C MSD
Matrix: Solid
Analysis Batch: 225792

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 225555

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C6-C10)	5.2		6.76	11.5		mg/Kg	☼	92	85 - 153	15	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
a,a,a-Trifluorotoluene	*83*		*77 - 123*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 280-225630/1-A
Matrix: Solid
Analysis Batch: 225901

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 225630

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
DRO (C10-C28)	1.10	J	3.8	0.65	mg/Kg		05/13/14 20:25	05/15/14 11:45	1
Motor Oil (C20-C38)	ND		12	3.8	mg/Kg		05/13/14 20:25	05/15/14 11:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	*79*		*49 - 115*	*05/13/14 20:25*	*05/15/14 11:45*	*1*

Lab Sample ID: LCS 280-225630/2-A
Matrix: Solid
Analysis Batch: 225901

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 225630

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
DRO (C10-C28)			66.1	52.3		mg/Kg		79	53 - 115		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	*75*		*49 - 115*

Lab Sample ID: 280-55336-A-1-B MS
Matrix: Solid
Analysis Batch: 225901

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 225630

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
DRO (C10-C28)	8.7	B	81.2	55.0		mg/Kg	☼	57	56 - 115		

Surrogate	MS %Recovery	MS Qualifier	Limits
o-Terphenyl	*57*		*49 - 115*

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: 280-55336-A-1-C MSD
Matrix: Solid
Analysis Batch: 225901

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 225630

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
DRO (C10-C28)	8.7	B	81.5	59.8		mg/Kg	☼	63	56 - 115	8	23

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
o-Terphenyl	*61*		*49 - 115*

Method: Moisture - Percent Moisture

Lab Sample ID: 280-55074-C-2 DU
Matrix: Solid
Analysis Batch: 225752

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	10			10		%				2	20
Percent Solids	90			90		%				0.3	20

Lab Sample ID: 280-55124-C-4 DU
Matrix: Solid
Analysis Batch: 225752

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	2.9			2.9		%				3	20
Percent Solids	97			97		%				0.08	20

Client Sample ID: P2-SB01-1012

Lab Sample ID: 280-55352-1

Date Collected: 05/12/14 09:50

Matrix: Solid

Date Received: 05/12/14 16:55

Percent Solids: 83.4

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			5.318 g	5 mL	226073	05/15/14 14:00	ADD	TAL DEN
Total/NA	Analysis	8260B		1	5.318 g	5 mL	226081	05/16/14 01:46	ADD	TAL DEN
Total/NA	Prep	3546			30.1 g	1 mL	225706	05/14/14 12:27	EER	TAL DEN
Total/NA	Analysis	8270C SIM		1	30.1 g	1 mL	226113	05/16/14 16:08	KGV	TAL DEN
Total/NA	Prep	3546	DL		30.1 g	1 mL	225706	05/14/14 12:27	EER	TAL DEN
Total/NA	Analysis	8270C SIM	DL	5	30.1 g	1 mL	226270	05/17/14 07:26	KGV	TAL DEN
Total/NA	Prep	5030B			10.42 g	10 mL	225555	05/13/14 14:51	AMB1	TAL DEN
Total/NA	Analysis	8015B		1	10.42 g	10 mL	225792	05/14/14 19:06	AMB1	TAL DEN
Total/NA	Prep	3546			30.0 g	1 mL	225630	05/13/14 20:25	EJP	TAL DEN
Total/NA	Analysis	8015B		1	30.0 g	1 mL	225901	05/15/14 14:36	MRB	TAL DEN
Total/NA	Analysis	Moisture		1			225752	05/14/14 12:03	AMP	TAL DEN

Client Sample ID: P2-SBREPLICATE

Lab Sample ID: 280-55352-2

Date Collected: 05/12/14 10:00

Matrix: Solid

Date Received: 05/12/14 16:55

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5030B			4.995 g	1000 mL	226332	05/19/14 07:54	JLS	TAL DEN
Total/NA	Analysis	8260B		1	4.995 g	1000 mL	226344	05/19/14 13:31	JLS	TAL DEN
Total/NA	Prep	3546			31.0 g	1 mL	225706	05/14/14 12:27	EER	TAL DEN
Total/NA	Analysis	8270C SIM		1	31.0 g	1 mL	226113	05/16/14 16:36	KGV	TAL DEN
Total/NA	Prep	3546	DL		31.0 g	1 mL	225706	05/14/14 12:27	EER	TAL DEN
Total/NA	Analysis	8270C SIM	DL	2	31.0 g	1 mL	226270	05/17/14 07:53	KGV	TAL DEN
Total/NA	Prep	5030B			10.35 g	10 mL	225555	05/13/14 14:51	AMB1	TAL DEN
Total/NA	Analysis	8015B		1	10.35 g	10 mL	225792	05/14/14 19:30	AMB1	TAL DEN
Total/NA	Prep	3546			30.1 g	1 mL	225630	05/13/14 20:25	EJP	TAL DEN
Total/NA	Analysis	8015B		1	30.1 g	1 mL	225901	05/15/14 15:04	MRB	TAL DEN
Total/NA	Analysis	Moisture		1			225752	05/14/14 12:03	AMP	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 280-55352-1

Login Number: 55352

List Source: TestAmerica Denver

List Number: 1

Creator: Dedio, Michael T

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Chain of Custody F

280-55352 Chain of Custody

Sampler ID MAS

Temperature on Receipt 3.8 IRs +.2 for 5/12/14

Drinking Water? Yes ☐ No ☑

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
Terracon	John Dellaport	5/12/14	186387
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 1
10625 W. I-70 Frontage Rd N, Ste 3	303-423-3300		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Wheat Ridge / CO / 80033	Meredith Stewart		
Project Name and Location (State)	**Carrier/Waybill Number**		
Perry 11, Denver, CO			
Contract/Purchase Order/Quote No.			
25147007			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: VOCs (8260B)	TPH-GRO (8015B)	TPH-DRO (8015B)	PAH (8270 SIM)
P2-SB01-1012	5/12/14	0950				X	X						X	X	X	X
P2-SBReplicate*	5/12/14	1000				X	X						X	X	X	X

Special Instructions/ Conditions of Receipt

* Prioritize analysis of VOCs, then GRO, then DRO, then PAH.

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other Standard

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Meredith Stewart	5/12/14	1655	1. Received By:	5/12/14	16:55
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

APPENDIX D2

TESTAMERICA LABORATORY REPORT FOR SAMPLES COLLECTED ON MAY 14, 2014

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Tel: (303)736-0100

TestAmerica Job ID: 280-55421-1
Client Project/Site: 25147007 - Perry II

For:
Terracon Consulting Eng & Scientists
10625 W I-70 Frontage Rd. N.
Wheatridge, Colorado 80033

Attn: John Dellaport

Authorized for release by:
5/23/2014 7:50:03 AM

Donna Rydberg, Senior Project Manager
(303)736-0192
donna.rydberg@testamericainc.com

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Job ID: 280-55421-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: Terracon Consulting Engineering & Scientists

Project: 25147007 - Perry II

Report Number: 280-55421-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 05/14/2014; the samples arrived in good condition, properly preserved and on ice. The temperature of the cooler at receipt was 2.5ºC.

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples P2-MW01 (280-55421-1), P2-MWREPLICATE (280-55421-2), P2-RINSATE (280-55421-3) and TRIP BLANK (280-55421-4) were analyzed for volatile organic compounds (GC-MS) in accordance with EPA SW-846 Method 8260B.

Several spike recoveries were outside control limits in the MS and MSD associated with batch 226691. This MS/MSD sample was performed on a sample from another client and/or job. The associated LCS was in control and provides evidence that operating procedures were in control.

Matrix spike samples were not requested and they were not performed in batch 226895. The associated Method Blank and LCS were in control and provide evidence that operating procedures were in control.

No other difficulties were encountered during the volatiles analysis.

All other quality control parameters were within the acceptance limits.

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery exceeds the control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: 25147007 - Perry II

TestAmerica Job ID: 280-55421-1

Client Sample ID: P2-MW01 — Lab Sample ID: 280-55421-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	21		10	1.9	ug/L	1		8260B	Total/NA
2-Butanone (MEK)	8.3		6.0	2.0	ug/L	1		8260B	Total/NA
Cyclohexane	4.8		2.0	0.28	ug/L	1		8260B	Total/NA
1,2-Dichloroethane	55		1.0	0.13	ug/L	1		8260B	Total/NA
1,2-Dichloropropane	0.49	J	1.0	0.18	ug/L	1		8260B	Total/NA
Ethylbenzene	12		1.0	0.16	ug/L	1		8260B	Total/NA
Isopropylbenzene	1.4		1.0	0.19	ug/L	1		8260B	Total/NA
Methylcyclohexane	5.0		1.0	0.36	ug/L	1		8260B	Total/NA
m-Xylene & p-Xylene	43		2.0	0.34	ug/L	1		8260B	Total/NA
o-Xylene	13		1.0	0.19	ug/L	1		8260B	Total/NA
Toluene	0.38	J	1.0	0.17	ug/L	1		8260B	Total/NA
Xylenes, (Total)	55		2.2	0.39	ug/L	1		8260B	Total/NA

Client Sample ID: P2-MWREPLICATE — Lab Sample ID: 280-55421-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	19		10	1.9	ug/L	1		8260B	Total/NA
2-Butanone (MEK)	7.4		6.0	2.0	ug/L	1		8260B	Total/NA
Cyclohexane	4.4		2.0	0.28	ug/L	1		8260B	Total/NA
1,2-Dichloroethane	51		1.0	0.13	ug/L	1		8260B	Total/NA
1,2-Dichloropropane	0.46	J	1.0	0.18	ug/L	1		8260B	Total/NA
Ethylbenzene	11		1.0	0.16	ug/L	1		8260B	Total/NA
Isopropylbenzene	1.3		1.0	0.19	ug/L	1		8260B	Total/NA
Methylcyclohexane	4.5		1.0	0.36	ug/L	1		8260B	Total/NA
m-Xylene & p-Xylene	39		2.0	0.34	ug/L	1		8260B	Total/NA
o-Xylene	12		1.0	0.19	ug/L	1		8260B	Total/NA
Toluene	0.33	J	1.0	0.17	ug/L	1		8260B	Total/NA
Xylenes, (Total)	51		2.2	0.39	ug/L	1		8260B	Total/NA

Client Sample ID: P2-RINSATE — Lab Sample ID: 280-55421-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	2.6	J	10	1.9	ug/L	1		8260B	Total/NA
Toluene	0.17	J	1.0	0.17	ug/L	1		8260B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 280-55421-4

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: 25147007 - Perry II

TestAmerica Job ID: 280-55421-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL DEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: 25147007 - Perry II

TestAmerica Job ID: 280-55421-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-55421-1	P2-MW01	Water	05/14/14 09:40	05/14/14 15:50
280-55421-2	P2-MWREPLICATE	Water	05/14/14 10:00	05/14/14 15:50
280-55421-3	P2-RINSATE	Water	05/14/14 10:05	05/14/14 15:50
280-55421-4	TRIP BLANK	Water	05/14/14 00:00	05/14/14 15:50

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: P2-MW01
Date Collected: 05/14/14 09:40
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**21**		10	1.9	ug/L			05/22/14 06:42	1
Benzene	ND		1.0	0.16	ug/L			05/22/14 06:42	1
Bromoform	ND		1.0	0.19	ug/L			05/22/14 06:42	1
Bromomethane	ND		2.0	0.21	ug/L			05/22/14 06:42	1
2-Butanone (MEK)	**8.3**		6.0	2.0	ug/L			05/22/14 06:42	1
Carbon disulfide	ND		2.0	0.45	ug/L			05/22/14 06:42	1
Carbon tetrachloride	ND		1.0	0.19	ug/L			05/22/14 06:42	1
Chlorobenzene	ND		1.0	0.17	ug/L			05/22/14 06:42	1
Chlorobromomethane	ND		1.0	0.10	ug/L			05/22/14 06:42	1
Chlorodibromomethane	ND		1.0	0.17	ug/L			05/22/14 06:42	1
Chloroethane	ND		2.0	0.41	ug/L			05/22/14 06:42	1
Chloroform	ND		1.0	0.16	ug/L			05/22/14 06:42	1
Chloromethane	ND		2.0	0.30	ug/L			05/22/14 06:42	1
cis-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/22/14 06:42	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			05/22/14 06:42	1
Cyclohexane	**4.8**		2.0	0.28	ug/L			05/22/14 06:42	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.47	ug/L			05/22/14 06:42	1
1,2-Dibromoethane	ND		1.0	0.18	ug/L			05/22/14 06:42	1
1,2-Dichlorobenzene	ND		1.0	0.15	ug/L			05/22/14 06:42	1
1,3-Dichlorobenzene	ND		1.0	0.13	ug/L			05/22/14 06:42	1
1,4-Dichlorobenzene	ND		1.0	0.16	ug/L			05/22/14 06:42	1
Dichlorobromomethane	ND		1.0	0.17	ug/L			05/22/14 06:42	1
Dichlorodifluoromethane	ND		2.0	0.31	ug/L			05/22/14 06:42	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			05/22/14 06:42	1
1,2-Dichloroethane	**55**		1.0	0.13	ug/L			05/22/14 06:42	1
1,1-Dichloroethene	ND		1.0	0.23	ug/L			05/22/14 06:42	1
1,2-Dichloropropane	**0.49**	**J**	1.0	0.18	ug/L			05/22/14 06:42	1
1,4-Dioxane	ND		200	57	ug/L			05/22/14 06:42	1
Ethylbenzene	**12**		1.0	0.16	ug/L			05/22/14 06:42	1
2-Hexanone	ND		5.0	1.7	ug/L			05/22/14 06:42	1
Isopropylbenzene	**1.4**		1.0	0.19	ug/L			05/22/14 06:42	1
Methyl acetate	ND		5.0	1.6	ug/L			05/22/14 06:42	1
Methylcyclohexane	**5.0**		1.0	0.36	ug/L			05/22/14 06:42	1
Methylene Chloride	ND		2.0	0.32	ug/L			05/22/14 06:42	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	0.98	ug/L			05/22/14 06:42	1
Methyl tert-butyl ether	ND		5.0	0.25	ug/L			05/22/14 06:42	1
m-Xylene & p-Xylene	**43**		2.0	0.34	ug/L			05/22/14 06:42	1
o-Xylene	**13**		1.0	0.19	ug/L			05/22/14 06:42	1
Styrene	ND		1.0	0.17	ug/L			05/22/14 06:42	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			05/22/14 06:42	1
Tetrachloroethene	ND		1.0	0.20	ug/L			05/22/14 06:42	1
Toluene	**0.38**	**J**	1.0	0.17	ug/L			05/22/14 06:42	1
trans-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/22/14 06:42	1
trans-1,3-Dichloropropene	ND		3.0	0.19	ug/L			05/22/14 06:42	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			05/22/14 06:42	1
1,2,4-Trichlorobenzene	ND		1.0	0.21	ug/L			05/22/14 06:42	1
1,1,1-Trichloroethane	ND		1.0	0.16	ug/L			05/22/14 06:42	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			05/22/14 06:42	1
Trichloroethene	ND		1.0	0.16	ug/L			05/22/14 06:42	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: P2-MW01
Date Collected: 05/14/14 09:40
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichlorofluoromethane	ND		2.0	0.29	ug/L			05/22/14 06:42	1
1,1,2-Trichlorotrifluoroethane	ND		3.0	0.42	ug/L			05/22/14 06:42	1
Vinyl chloride	ND		1.0	0.10	ug/L			05/22/14 06:42	1
Xylenes, (Total)	**55**		2.2	0.39	ug/L			05/22/14 06:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*78 - 120*		*05/22/14 06:42*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 120*		*05/22/14 06:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 127*		*05/22/14 06:42*	*1*
Toluene-d8 (Surr)	*106*		*80 - 125*		*05/22/14 06:42*	*1*

Client Sample ID: P2-MWREPLICATE
Date Collected: 05/14/14 10:00
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**19**		10	1.9	ug/L			05/22/14 07:01	1
Benzene	ND		1.0	0.16	ug/L			05/22/14 07:01	1
Bromoform	ND		1.0	0.19	ug/L			05/22/14 07:01	1
Bromomethane	ND		2.0	0.21	ug/L			05/22/14 07:01	1
2-Butanone (MEK)	**7.4**		6.0	2.0	ug/L			05/22/14 07:01	1
Carbon disulfide	ND		2.0	0.45	ug/L			05/22/14 07:01	1
Carbon tetrachloride	ND		1.0	0.19	ug/L			05/22/14 07:01	1
Chlorobenzene	ND		1.0	0.17	ug/L			05/22/14 07:01	1
Chlorobromomethane	ND		1.0	0.10	ug/L			05/22/14 07:01	1
Chlorodibromomethane	ND		1.0	0.17	ug/L			05/22/14 07:01	1
Chloroethane	ND		2.0	0.41	ug/L			05/22/14 07:01	1
Chloroform	ND		1.0	0.16	ug/L			05/22/14 07:01	1
Chloromethane	ND		2.0	0.30	ug/L			05/22/14 07:01	1
cis-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/22/14 07:01	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			05/22/14 07:01	1
Cyclohexane	**4.4**		2.0	0.28	ug/L			05/22/14 07:01	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.47	ug/L			05/22/14 07:01	1
1,2-Dibromoethane	ND		1.0	0.18	ug/L			05/22/14 07:01	1
1,2-Dichlorobenzene	ND		1.0	0.15	ug/L			05/22/14 07:01	1
1,3-Dichlorobenzene	ND		1.0	0.13	ug/L			05/22/14 07:01	1
1,4-Dichlorobenzene	ND		1.0	0.16	ug/L			05/22/14 07:01	1
Dichlorobromomethane	ND		1.0	0.17	ug/L			05/22/14 07:01	1
Dichlorodifluoromethane	ND		2.0	0.31	ug/L			05/22/14 07:01	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			05/22/14 07:01	1
1,2-Dichloroethane	**51**		1.0	0.13	ug/L			05/22/14 07:01	1
1,1-Dichloroethene	ND		1.0	0.23	ug/L			05/22/14 07:01	1
1,2-Dichloropropane	**0.46**	**J**	1.0	0.18	ug/L			05/22/14 07:01	1
1,4-Dioxane	ND		200	57	ug/L			05/22/14 07:01	1
Ethylbenzene	**11**		1.0	0.16	ug/L			05/22/14 07:01	1
2-Hexanone	ND		5.0	1.7	ug/L			05/22/14 07:01	1
Isopropylbenzene	**1.3**		1.0	0.19	ug/L			05/22/14 07:01	1
Methyl acetate	ND		5.0	1.6	ug/L			05/22/14 07:01	1
Methylcyclohexane	**4.5**		1.0	0.36	ug/L			05/22/14 07:01	1
Methylene Chloride	ND		2.0	0.32	ug/L			05/22/14 07:01	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	0.98	ug/L			05/22/14 07:01	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: P2-MWREPLICATE
Date Collected: 05/14/14 10:00
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		5.0	0.25	ug/L			05/22/14 07:01	1
m-Xylene & p-Xylene	**39**		2.0	0.34	ug/L			05/22/14 07:01	1
o-Xylene	**12**		1.0	0.19	ug/L			05/22/14 07:01	1
Styrene	ND		1.0	0.17	ug/L			05/22/14 07:01	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			05/22/14 07:01	1
Tetrachloroethene	ND		1.0	0.20	ug/L			05/22/14 07:01	1
Toluene	**0.33**	**J**	1.0	0.17	ug/L			05/22/14 07:01	1
trans-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/22/14 07:01	1
trans-1,3-Dichloropropene	ND		3.0	0.19	ug/L			05/22/14 07:01	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			05/22/14 07:01	1
1,2,4-Trichlorobenzene	ND		1.0	0.21	ug/L			05/22/14 07:01	1
1,1,1-Trichloroethane	ND		1.0	0.16	ug/L			05/22/14 07:01	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			05/22/14 07:01	1
Trichloroethene	ND		1.0	0.16	ug/L			05/22/14 07:01	1
Trichlorofluoromethane	ND		2.0	0.29	ug/L			05/22/14 07:01	1
1,1,2-Trichlorotrifluoroethane	ND		3.0	0.42	ug/L			05/22/14 07:01	1
Vinyl chloride	ND		1.0	0.10	ug/L			05/22/14 07:01	1
Xylenes, (Total)	**51**		2.2	0.39	ug/L			05/22/14 07:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*78 - 120*		*05/22/14 07:01*	*1*
Dibromofluoromethane (Surr)	*90*		*77 - 120*		*05/22/14 07:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 127*		*05/22/14 07:01*	*1*
Toluene-d8 (Surr)	*97*		*80 - 125*		*05/22/14 07:01*	*1*

Client Sample ID: P2-RINSATE
Date Collected: 05/14/14 10:05
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**2.6**	**J**	10	1.9	ug/L			05/22/14 07:21	1
Benzene	ND		1.0	0.16	ug/L			05/22/14 07:21	1
Bromoform	ND		1.0	0.19	ug/L			05/22/14 07:21	1
Bromomethane	ND		2.0	0.21	ug/L			05/22/14 07:21	1
2-Butanone (MEK)	ND		6.0	2.0	ug/L			05/22/14 07:21	1
Carbon disulfide	ND		2.0	0.45	ug/L			05/22/14 07:21	1
Carbon tetrachloride	ND		1.0	0.19	ug/L			05/22/14 07:21	1
Chlorobenzene	ND		1.0	0.17	ug/L			05/22/14 07:21	1
Chlorobromomethane	ND		1.0	0.10	ug/L			05/22/14 07:21	1
Chlorodibromomethane	ND		1.0	0.17	ug/L			05/22/14 07:21	1
Chloroethane	ND		2.0	0.41	ug/L			05/22/14 07:21	1
Chloroform	ND		1.0	0.16	ug/L			05/22/14 07:21	1
Chloromethane	ND		2.0	0.30	ug/L			05/22/14 07:21	1
cis-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/22/14 07:21	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			05/22/14 07:21	1
Cyclohexane	ND		2.0	0.28	ug/L			05/22/14 07:21	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.47	ug/L			05/22/14 07:21	1
1,2-Dibromoethane	ND		1.0	0.18	ug/L			05/22/14 07:21	1
1,2-Dichlorobenzene	ND		1.0	0.15	ug/L			05/22/14 07:21	1
1,3-Dichlorobenzene	ND		1.0	0.13	ug/L			05/22/14 07:21	1
1,4-Dichlorobenzene	ND		1.0	0.16	ug/L			05/22/14 07:21	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: P2-RINSATE
Date Collected: 05/14/14 10:05
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dichlorobromomethane	ND		1.0	0.17	ug/L			05/22/14 07:21	1
Dichlorodifluoromethane	ND		2.0	0.31	ug/L			05/22/14 07:21	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			05/22/14 07:21	1
1,2-Dichloroethane	ND		1.0	0.13	ug/L			05/22/14 07:21	1
1,1-Dichloroethene	ND		1.0	0.23	ug/L			05/22/14 07:21	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			05/22/14 07:21	1
1,4-Dioxane	ND		200	57	ug/L			05/22/14 07:21	1
Ethylbenzene	ND		1.0	0.16	ug/L			05/22/14 07:21	1
2-Hexanone	ND		5.0	1.7	ug/L			05/22/14 07:21	1
Isopropylbenzene	ND		1.0	0.19	ug/L			05/22/14 07:21	1
Methyl acetate	ND		5.0	1.6	ug/L			05/22/14 07:21	1
Methylcyclohexane	ND		1.0	0.36	ug/L			05/22/14 07:21	1
Methylene Chloride	ND		2.0	0.32	ug/L			05/22/14 07:21	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	0.98	ug/L			05/22/14 07:21	1
Methyl tert-butyl ether	ND		5.0	0.25	ug/L			05/22/14 07:21	1
m-Xylene & p-Xylene	ND		2.0	0.34	ug/L			05/22/14 07:21	1
o-Xylene	ND		1.0	0.19	ug/L			05/22/14 07:21	1
Styrene	ND		1.0	0.17	ug/L			05/22/14 07:21	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			05/22/14 07:21	1
Tetrachloroethene	ND		1.0	0.20	ug/L			05/22/14 07:21	1
Toluene	**0.17**	**J**	1.0	0.17	ug/L			05/22/14 07:21	1
trans-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/22/14 07:21	1
trans-1,3-Dichloropropene	ND		3.0	0.19	ug/L			05/22/14 07:21	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			05/22/14 07:21	1
1,2,4-Trichlorobenzene	ND		1.0	0.21	ug/L			05/22/14 07:21	1
1,1,1-Trichloroethane	ND		1.0	0.16	ug/L			05/22/14 07:21	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			05/22/14 07:21	1
Trichloroethene	ND		1.0	0.16	ug/L			05/22/14 07:21	1
Trichlorofluoromethane	ND		2.0	0.29	ug/L			05/22/14 07:21	1
1,1,2-Trichlorotrifluoroethane	ND		3.0	0.42	ug/L			05/22/14 07:21	1
Vinyl chloride	ND		1.0	0.10	ug/L			05/22/14 07:21	1
Xylenes, (Total)	ND		2.2	0.39	ug/L			05/22/14 07:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*78 - 120*		*05/22/14 07:21*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 120*		*05/22/14 07:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*70 - 127*		*05/22/14 07:21*	*1*
Toluene-d8 (Surr)	*109*		*80 - 125*		*05/22/14 07:21*	*1*

Client Sample ID: TRIP BLANK
Date Collected: 05/14/14 00:00
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10	1.9	ug/L			05/21/14 16:46	1
Benzene	ND		1.0	0.16	ug/L			05/21/14 16:46	1
Bromoform	ND		1.0	0.19	ug/L			05/21/14 16:46	1
Bromomethane	ND		2.0	0.21	ug/L			05/21/14 16:46	1
2-Butanone (MEK)	ND		6.0	2.0	ug/L			05/21/14 16:46	1
Carbon disulfide	ND		2.0	0.45	ug/L			05/21/14 16:46	1
Carbon tetrachloride	ND		1.0	0.19	ug/L			05/21/14 16:46	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: TRIP BLANK
Date Collected: 05/14/14 00:00
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	ND		1.0	0.17	ug/L			05/21/14 16:46	1
Chlorobromomethane	ND		1.0	0.10	ug/L			05/21/14 16:46	1
Chlorodibromomethane	ND		1.0	0.17	ug/L			05/21/14 16:46	1
Chloroethane	ND		2.0	0.41	ug/L			05/21/14 16:46	1
Chloroform	ND		1.0	0.16	ug/L			05/21/14 16:46	1
Chloromethane	ND		2.0	0.30	ug/L			05/21/14 16:46	1
cis-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/21/14 16:46	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			05/21/14 16:46	1
Cyclohexane	ND		2.0	0.28	ug/L			05/21/14 16:46	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.47	ug/L			05/21/14 16:46	1
1,2-Dibromoethane	ND		1.0	0.18	ug/L			05/21/14 16:46	1
1,2-Dichlorobenzene	ND		1.0	0.15	ug/L			05/21/14 16:46	1
1,3-Dichlorobenzene	ND		1.0	0.13	ug/L			05/21/14 16:46	1
1,4-Dichlorobenzene	ND		1.0	0.16	ug/L			05/21/14 16:46	1
Dichlorobromomethane	ND		1.0	0.17	ug/L			05/21/14 16:46	1
Dichlorodifluoromethane	ND		2.0	0.31	ug/L			05/21/14 16:46	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			05/21/14 16:46	1
1,2-Dichloroethane	ND		1.0	0.13	ug/L			05/21/14 16:46	1
1,1-Dichloroethene	ND		1.0	0.23	ug/L			05/21/14 16:46	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			05/21/14 16:46	1
1,4-Dioxane	ND		200	57	ug/L			05/21/14 16:46	1
Ethylbenzene	ND		1.0	0.16	ug/L			05/21/14 16:46	1
2-Hexanone	ND		5.0	1.7	ug/L			05/21/14 16:46	1
Isopropylbenzene	ND		1.0	0.19	ug/L			05/21/14 16:46	1
Methyl acetate	ND		5.0	1.6	ug/L			05/21/14 16:46	1
Methylcyclohexane	ND		1.0	0.36	ug/L			05/21/14 16:46	1
Methylene Chloride	ND		2.0	0.32	ug/L			05/21/14 16:46	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	0.98	ug/L			05/21/14 16:46	1
Methyl tert-butyl ether	ND		5.0	0.25	ug/L			05/21/14 16:46	1
m-Xylene & p-Xylene	ND		2.0	0.34	ug/L			05/21/14 16:46	1
o-Xylene	ND		1.0	0.19	ug/L			05/21/14 16:46	1
Styrene	ND		1.0	0.17	ug/L			05/21/14 16:46	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			05/21/14 16:46	1
Tetrachloroethene	ND		1.0	0.20	ug/L			05/21/14 16:46	1
Toluene	ND		1.0	0.17	ug/L			05/21/14 16:46	1
trans-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/21/14 16:46	1
trans-1,3-Dichloropropene	ND		3.0	0.19	ug/L			05/21/14 16:46	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			05/21/14 16:46	1
1,2,4-Trichlorobenzene	ND		1.0	0.21	ug/L			05/21/14 16:46	1
1,1,1-Trichloroethane	ND		1.0	0.16	ug/L			05/21/14 16:46	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			05/21/14 16:46	1
Trichloroethene	ND		1.0	0.16	ug/L			05/21/14 16:46	1
Trichlorofluoromethane	ND		2.0	0.29	ug/L			05/21/14 16:46	1
1,1,2-Trichlorotrifluoroethane	ND		3.0	0.42	ug/L			05/21/14 16:46	1
Vinyl chloride	ND		1.0	0.10	ug/L			05/21/14 16:46	1
Xylenes, (Total)	ND		2.2	0.39	ug/L			05/21/14 16:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*79*		*78 - 120*		*05/21/14 16:46*	*1*
Dibromofluoromethane (Surr)	*89*		*77 - 120*		*05/21/14 16:46*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: TRIP BLANK
Date Collected: 05/14/14 00:00
Date Received: 05/14/14 15:50

Lab Sample ID: 280-55421-4
Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	83		70 - 127		05/21/14 16:46	1
Toluene-d8 (Surr)	84		80 - 125		05/21/14 16:46	1

QC Association Summary

Client: Terracon Consulting Eng & Scientists
Project/Site: 25147007 - Perry II

TestAmerica Job ID: 280-55421-1

GC/MS VOA

Analysis Batch: 226691

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55421-4	TRIP BLANK	Total/NA	Water	8260B	
280-55440-B-2 MS	Matrix Spike	Total/NA	Water	8260B	
280-55440-B-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B	
LCS 280-226691/4	Lab Control Sample	Total/NA	Water	8260B	
MB 280-226691/5	Method Blank	Total/NA	Water	8260B	

Analysis Batch: 226895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-55421-1	P2-MW01	Total/NA	Water	8260B	
280-55421-2	P2-MWREPLICATE	Total/NA	Water	8260B	
280-55421-3	P2-RINSATE	Total/NA	Water	8260B	
LCS 280-226895/4	Lab Control Sample	Total/NA	Water	8260B	
MB 280-226895/5	Method Blank	Total/NA	Water	8260B	

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 280-226691/5
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10	1.9	ug/L			05/21/14 10:27	1
Benzene	ND		1.0	0.16	ug/L			05/21/14 10:27	1
Bromoform	ND		1.0	0.19	ug/L			05/21/14 10:27	1
Bromomethane	ND		2.0	0.21	ug/L			05/21/14 10:27	1
2-Butanone (MEK)	ND		6.0	2.0	ug/L			05/21/14 10:27	1
Carbon disulfide	ND		2.0	0.45	ug/L			05/21/14 10:27	1
Carbon tetrachloride	ND		1.0	0.19	ug/L			05/21/14 10:27	1
Chlorobenzene	ND		1.0	0.17	ug/L			05/21/14 10:27	1
Chlorobromomethane	ND		1.0	0.10	ug/L			05/21/14 10:27	1
Chlorodibromomethane	ND		1.0	0.17	ug/L			05/21/14 10:27	1
Chloroethane	ND		2.0	0.41	ug/L			05/21/14 10:27	1
Chloroform	ND		1.0	0.16	ug/L			05/21/14 10:27	1
Chloromethane	ND		2.0	0.30	ug/L			05/21/14 10:27	1
cis-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/21/14 10:27	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			05/21/14 10:27	1
Cyclohexane	ND		2.0	0.28	ug/L			05/21/14 10:27	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.47	ug/L			05/21/14 10:27	1
1,2-Dibromoethane	ND		1.0	0.18	ug/L			05/21/14 10:27	1
1,2-Dichlorobenzene	ND		1.0	0.15	ug/L			05/21/14 10:27	1
1,3-Dichlorobenzene	ND		1.0	0.13	ug/L			05/21/14 10:27	1
1,4-Dichlorobenzene	ND		1.0	0.16	ug/L			05/21/14 10:27	1
Dichlorobromomethane	ND		1.0	0.17	ug/L			05/21/14 10:27	1
Dichlorodifluoromethane	ND		2.0	0.31	ug/L			05/21/14 10:27	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			05/21/14 10:27	1
1,2-Dichloroethane	ND		1.0	0.13	ug/L			05/21/14 10:27	1
1,1-Dichloroethene	ND		1.0	0.23	ug/L			05/21/14 10:27	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			05/21/14 10:27	1
1,4-Dioxane	ND		200	57	ug/L			05/21/14 10:27	1
Ethylbenzene	ND		1.0	0.16	ug/L			05/21/14 10:27	1
2-Hexanone	ND		5.0	1.7	ug/L			05/21/14 10:27	1
Isopropylbenzene	ND		1.0	0.19	ug/L			05/21/14 10:27	1
Methyl acetate	ND		5.0	1.6	ug/L			05/21/14 10:27	1
Methylcyclohexane	ND		1.0	0.36	ug/L			05/21/14 10:27	1
Methylene Chloride	ND		2.0	0.32	ug/L			05/21/14 10:27	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	0.98	ug/L			05/21/14 10:27	1
Methyl tert-butyl ether	ND		5.0	0.25	ug/L			05/21/14 10:27	1
m-Xylene & p-Xylene	ND		2.0	0.34	ug/L			05/21/14 10:27	1
o-Xylene	ND		1.0	0.19	ug/L			05/21/14 10:27	1
Styrene	ND		1.0	0.17	ug/L			05/21/14 10:27	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			05/21/14 10:27	1
Tetrachloroethene	ND		1.0	0.20	ug/L			05/21/14 10:27	1
Toluene	ND		1.0	0.17	ug/L			05/21/14 10:27	1
trans-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/21/14 10:27	1
trans-1,3-Dichloropropene	ND		3.0	0.19	ug/L			05/21/14 10:27	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			05/21/14 10:27	1
1,2,4-Trichlorobenzene	ND		1.0	0.21	ug/L			05/21/14 10:27	1
1,1,1-Trichloroethane	ND		1.0	0.16	ug/L			05/21/14 10:27	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			05/21/14 10:27	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 280-226691/5
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		1.0	0.16	ug/L			05/21/14 10:27	1
Trichlorofluoromethane	ND		2.0	0.29	ug/L			05/21/14 10:27	1
1,1,2-Trichlorotrifluoroethane	ND		3.0	0.42	ug/L			05/21/14 10:27	1
Vinyl chloride	ND		1.0	0.10	ug/L			05/21/14 10:27	1
Xylenes, (Total)	ND		2.2	0.39	ug/L			05/21/14 10:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*78 - 120*		*05/21/14 10:27*	*1*
Dibromofluoromethane (Surr)	*97*		*77 - 120*		*05/21/14 10:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 127*		*05/21/14 10:27*	*1*
Toluene-d8 (Surr)	*85*		*80 - 125*		*05/21/14 10:27*	*1*

Lab Sample ID: LCS 280-226691/4
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	20.1		ug/L		100	50 - 156
Benzene	5.00	4.80		ug/L		96	74 - 135
Bromoform	5.00	4.39		ug/L		88	62 - 135
Bromomethane	5.00	4.69		ug/L		94	38 - 150
2-Butanone (MEK)	20.0	19.6		ug/L		98	44 - 150
Carbon disulfide	5.00	4.68		ug/L		94	34 - 150
Carbon tetrachloride	5.00	5.20		ug/L		104	67 - 135
Chlorobenzene	5.00	4.44		ug/L		89	76 - 135
Chlorobromomethane	5.00	5.09		ug/L		102	70 - 135
Chlorodibromomethane	5.00	4.76		ug/L		95	68 - 135
Chloroethane	5.00	4.44		ug/L		89	46 - 147
Chloroform	5.00	4.86		ug/L		97	76 - 120
Chloromethane	5.00	4.31		ug/L		86	34 - 145
cis-1,2-Dichloroethene	5.00	4.84		ug/L		97	73 - 135
cis-1,3-Dichloropropene	5.00	4.10		ug/L		82	66 - 135
1,2-Dibromo-3-Chloropropane	5.00	4.62	J	ug/L		92	65 - 150
1,2-Dibromoethane	5.00	4.68		ug/L		94	71 - 135
1,2-Dichlorobenzene	5.00	4.52		ug/L		90	75 - 135
1,3-Dichlorobenzene	5.00	4.41		ug/L		88	74 - 135
1,4-Dichlorobenzene	5.00	4.36		ug/L		87	75 - 135
Dichlorobromomethane	5.00	4.89		ug/L		98	73 - 135
Dichlorodifluoromethane	5.00	4.07		ug/L		81	28 - 152
1,1-Dichloroethane	5.00	4.83		ug/L		97	75 - 135
1,2-Dichloroethane	5.00	5.01		ug/L		100	70 - 135
1,1-Dichloroethene	5.00	4.63		ug/L		93	71 - 136
1,2-Dichloropropane	5.00	4.83		ug/L		97	71 - 120
Ethylbenzene	5.00	4.35		ug/L		87	72 - 120
2-Hexanone	20.0	18.5		ug/L		92	47 - 150
Isopropylbenzene	5.00	4.35		ug/L		87	75 - 135
Methylene Chloride	5.00	4.50		ug/L		90	54 - 141
4-Methyl-2-pentanone (MIBK)	20.0	19.2		ug/L		96	53 - 150

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 280-226691/4
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	5.00	5.11		ug/L		102	46 - 135
m-Xylene & p-Xylene	5.00	4.45		ug/L		89	74 - 135
o-Xylene	5.00	4.47		ug/L		89	73 - 135
Styrene	5.00	4.52		ug/L		90	68 - 135
1,1,2,2-Tetrachloroethane	5.00	4.55		ug/L		91	66 - 135
Tetrachloroethene	5.00	4.51		ug/L		90	70 - 135
Toluene	5.00	4.89		ug/L		98	73 - 120
trans-1,2-Dichloroethene	5.00	4.92		ug/L		98	75 - 135
trans-1,3-Dichloropropene	5.00	4.85		ug/L		97	68 - 135
1,2,3-Trichlorobenzene	5.00	4.63		ug/L		93	60 - 135
1,2,4-Trichlorobenzene	5.00	4.62		ug/L		92	64 - 135
1,1,1-Trichloroethane	5.00	4.95		ug/L		99	70 - 135
1,1,2-Trichloroethane	5.00	5.21		ug/L		104	73 - 135
Trichloroethene	5.00	4.94		ug/L		99	73 - 135
Trichlorofluoromethane	5.00	5.01		ug/L		100	47 - 150
Vinyl chloride	5.00	4.41		ug/L		88	40 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*85*		*78 - 120*
Dibromofluoromethane (Surr)	*100*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*100*		*70 - 127*
Toluene-d8 (Surr)	*90*		*80 - 125*

Lab Sample ID: 280-55440-B-2 MS
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	ND		20.0	17.3		ug/L		87	50 - 156
Benzene	ND		5.00	4.02		ug/L		80	74 - 135
Bromoform	ND		5.00	3.49		ug/L		70	62 - 135
Bromomethane	ND		5.00	4.21		ug/L		84	38 - 150
2-Butanone (MEK)	ND		20.0	18.3		ug/L		91	44 - 150
Carbon disulfide	ND		5.00	3.71		ug/L		74	34 - 150
Carbon tetrachloride	ND		5.00	3.85		ug/L		77	67 - 135
Chlorobenzene	ND		5.00	3.76	F1	ug/L		75	76 - 135
Chlorobromomethane	ND		5.00	4.10		ug/L		82	70 - 135
Chlorodibromomethane	ND		5.00	3.91		ug/L		78	68 - 135
Chloroethane	1.2	J	5.00	5.06		ug/L		77	46 - 147
Chloroform	ND		5.00	3.75	F1	ug/L		75	76 - 120
Chloromethane	ND		5.00	3.85		ug/L		77	34 - 145
cis-1,2-Dichloroethene	0.92	J	5.00	4.95		ug/L		80	73 - 135
cis-1,3-Dichloropropene	ND		5.00	3.50		ug/L		70	66 - 135
1,2-Dibromo-3-Chloropropane	ND		5.00	4.27	J	ug/L		85	65 - 150
1,2-Dibromoethane	ND		5.00	3.99		ug/L		80	71 - 135
1,2-Dichlorobenzene	ND		5.00	3.79		ug/L		76	75 - 135
1,3-Dichlorobenzene	ND		5.00	3.74		ug/L		75	74 - 135
1,4-Dichlorobenzene	ND		5.00	3.71	F1	ug/L		74	75 - 135

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-55440-B-2 MS
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dichlorobromomethane	ND		5.00	3.83		ug/L		77	73 - 135
Dichlorodifluoromethane	ND		5.00	3.79		ug/L		76	28 - 152
1,1-Dichloroethane	9.9		5.00	12.5	F1	ug/L		53	75 - 135
1,2-Dichloroethane	ND		5.00	3.83		ug/L		77	70 - 135
1,1-Dichloroethene	ND		5.00	3.86		ug/L		77	71 - 136
1,2-Dichloropropane	ND		5.00	4.22		ug/L		84	71 - 120
Ethylbenzene	ND		5.00	3.71		ug/L		74	72 - 120
2-Hexanone	ND		20.0	17.6		ug/L		88	47 - 150
Isopropylbenzene	ND		5.00	3.83		ug/L		77	75 - 135
Methylene Chloride	ND		5.00	3.04		ug/L		61	54 - 141
4-Methyl-2-pentanone (MIBK)	ND		20.0	18.3		ug/L		92	53 - 150
Methyl tert-butyl ether	19		5.00	21.8		ug/L		58	46 - 135
m-Xylene & p-Xylene	ND		5.00	3.82		ug/L		76	74 - 135
o-Xylene	ND		5.00	3.81		ug/L		76	73 - 135
Styrene	ND		5.00	3.84		ug/L		77	68 - 135
1,1,2,2-Tetrachloroethane	ND		5.00	3.86		ug/L		77	66 - 135
Tetrachloroethene	ND		5.00	3.81		ug/L		76	70 - 135
Toluene	ND		5.00	4.08		ug/L		82	73 - 120
trans-1,2-Dichloroethene	ND		5.00	4.05		ug/L		81	75 - 135
trans-1,3-Dichloropropene	ND		5.00	3.94		ug/L		79	68 - 135
1,2,3-Trichlorobenzene	ND		5.00	3.94		ug/L		79	60 - 135
1,2,4-Trichlorobenzene	ND		5.00	4.07		ug/L		81	64 - 135
1,1,1-Trichloroethane	ND		5.00	3.77		ug/L		75	70 - 135
1,1,2-Trichloroethane	ND		5.00	4.31		ug/L		86	73 - 135
Trichloroethene	ND		5.00	4.17		ug/L		83	73 - 135
Trichlorofluoromethane	ND		5.00	4.32		ug/L		86	47 - 150
Vinyl chloride	0.32	J	5.00	4.56		ug/L		85	40 - 144

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*80*		*78 - 120*
Dibromofluoromethane (Surr)	*88*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*87*		*70 - 127*
Toluene-d8 (Surr)	*86*		*80 - 125*

Lab Sample ID: 280-55440-B-2 MSD
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	ND		20.0	18.7		ug/L		94	50 - 156	8	41
Benzene	ND		5.00	4.45		ug/L		89	74 - 135	10	20
Bromoform	ND		5.00	4.13		ug/L		83	62 - 135	17	21
Bromomethane	ND		5.00	4.58		ug/L		92	38 - 150	8	24
2-Butanone (MEK)	ND		20.0	20.3		ug/L		101	44 - 150	10	32
Carbon disulfide	ND		5.00	4.22		ug/L		84	34 - 150	13	20
Carbon tetrachloride	ND		5.00	4.37		ug/L		87	67 - 135	12	21
Chlorobenzene	ND		5.00	4.17		ug/L		83	76 - 135	10	20
Chlorobromomethane	ND		5.00	4.70		ug/L		94	70 - 135	14	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 280-55440-B-2 MSD
Matrix: Water
Analysis Batch: 226691

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chlorodibromomethane	ND		5.00	4.35		ug/L		87	68 - 135	11	20
Chloroethane	1.2	J	5.00	5.38		ug/L		84	46 - 147	6	25
Chloroform	ND		5.00	4.30		ug/L		86	76 - 120	14	20
Chloromethane	ND		5.00	4.16		ug/L		83	34 - 145	8	24
cis-1,2-Dichloroethene	0.92	J	5.00	5.68		ug/L		95	73 - 135	14	20
cis-1,3-Dichloropropene	ND		5.00	3.94		ug/L		79	66 - 135	12	20
1,2-Dibromo-3-Chloropropane	ND		5.00	4.48	J	ug/L		90	65 - 150	5	22
1,2-Dibromoethane	ND		5.00	4.44		ug/L		89	71 - 135	11	20
1,2-Dichlorobenzene	ND		5.00	4.34		ug/L		87	75 - 135	14	20
1,3-Dichlorobenzene	ND		5.00	4.22		ug/L		84	74 - 135	12	20
1,4-Dichlorobenzene	ND		5.00	4.22		ug/L		84	75 - 135	13	23
Dichlorobromomethane	ND		5.00	4.27		ug/L		85	73 - 135	11	20
Dichlorodifluoromethane	ND		5.00	4.21		ug/L		84	28 - 152	10	24
1,1-Dichloroethane	9.9		5.00	13.4	F1	ug/L		72	75 - 135	7	21
1,2-Dichloroethane	ND		5.00	4.26		ug/L		85	70 - 135	11	20
1,1-Dichloroethene	ND		5.00	4.44		ug/L		89	71 - 136	14	20
1,2-Dichloropropane	ND		5.00	4.63		ug/L		93	71 - 120	9	20
Ethylbenzene	ND		5.00	4.10		ug/L		82	72 - 120	10	26
2-Hexanone	ND		20.0	18.5		ug/L		93	47 - 150	5	25
Isopropylbenzene	ND		5.00	4.17		ug/L		83	75 - 135	9	20
Methylene Chloride	ND		5.00	3.63		ug/L		73	54 - 141	18	20
4-Methyl-2-pentanone (MIBK)	ND		20.0	19.1		ug/L		96	53 - 150	4	22
Methyl tert-butyl ether	19		5.00	23.7		ug/L		96	46 - 135	8	21
m-Xylene & p-Xylene	ND		5.00	4.16		ug/L		83	74 - 135	8	20
o-Xylene	ND		5.00	4.22		ug/L		84	73 - 135	10	20
Styrene	ND		5.00	4.29		ug/L		86	68 - 135	11	20
1,1,2,2-Tetrachloroethane	ND		5.00	4.21		ug/L		84	66 - 135	9	20
Tetrachloroethene	ND		5.00	4.26		ug/L		85	70 - 135	11	20
Toluene	ND		5.00	4.53		ug/L		91	73 - 120	10	20
trans-1,2-Dichloroethene	ND		5.00	4.64		ug/L		93	75 - 135	14	24
trans-1,3-Dichloropropene	ND		5.00	4.31		ug/L		86	68 - 135	9	20
1,2,3-Trichlorobenzene	ND		5.00	4.63		ug/L		93	60 - 135	16	29
1,2,4-Trichlorobenzene	ND		5.00	4.48		ug/L		90	64 - 135	9	25
1,1,1-Trichloroethane	ND		5.00	4.26		ug/L		85	70 - 135	12	20
1,1,2-Trichloroethane	ND		5.00	4.78		ug/L		96	73 - 135	10	21
Trichloroethene	ND		5.00	4.60		ug/L		92	73 - 135	10	20
Trichlorofluoromethane	ND		5.00	4.88		ug/L		98	47 - 150	12	20
Vinyl chloride	0.32	J	5.00	4.91		ug/L		92	40 - 144	7	24

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*84*		*78 - 120*
Dibromofluoromethane (Surr)	*95*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 127*
Toluene-d8 (Surr)	*90*		*80 - 125*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 280-226895/5
Matrix: Water
Analysis Batch: 226895

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	ND		10	1.9	ug/L			05/21/14 22:17	1
Benzene	ND		1.0	0.16	ug/L			05/21/14 22:17	1
Bromoform	ND		1.0	0.19	ug/L			05/21/14 22:17	1
Bromomethane	ND		2.0	0.21	ug/L			05/21/14 22:17	1
2-Butanone (MEK)	ND		6.0	2.0	ug/L			05/21/14 22:17	1
Carbon disulfide	ND		2.0	0.45	ug/L			05/21/14 22:17	1
Carbon tetrachloride	ND		1.0	0.19	ug/L			05/21/14 22:17	1
Chlorobenzene	ND		1.0	0.17	ug/L			05/21/14 22:17	1
Chlorobromomethane	ND		1.0	0.10	ug/L			05/21/14 22:17	1
Chlorodibromomethane	ND		1.0	0.17	ug/L			05/21/14 22:17	1
Chloroethane	ND		2.0	0.41	ug/L			05/21/14 22:17	1
Chloroform	ND		1.0	0.16	ug/L			05/21/14 22:17	1
Chloromethane	ND		2.0	0.30	ug/L			05/21/14 22:17	1
cis-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/21/14 22:17	1
cis-1,3-Dichloropropene	ND		1.0	0.16	ug/L			05/21/14 22:17	1
Cyclohexane	ND		2.0	0.28	ug/L			05/21/14 22:17	1
1,2-Dibromo-3-Chloropropane	ND		5.0	0.47	ug/L			05/21/14 22:17	1
1,2-Dibromoethane	ND		1.0	0.18	ug/L			05/21/14 22:17	1
1,2-Dichlorobenzene	ND		1.0	0.15	ug/L			05/21/14 22:17	1
1,3-Dichlorobenzene	ND		1.0	0.13	ug/L			05/21/14 22:17	1
1,4-Dichlorobenzene	ND		1.0	0.16	ug/L			05/21/14 22:17	1
Dichlorobromomethane	ND		1.0	0.17	ug/L			05/21/14 22:17	1
Dichlorodifluoromethane	ND		2.0	0.31	ug/L			05/21/14 22:17	1
1,1-Dichloroethane	ND		1.0	0.22	ug/L			05/21/14 22:17	1
1,2-Dichloroethane	ND		1.0	0.13	ug/L			05/21/14 22:17	1
1,1-Dichloroethene	ND		1.0	0.23	ug/L			05/21/14 22:17	1
1,2-Dichloropropane	ND		1.0	0.18	ug/L			05/21/14 22:17	1
1,4-Dioxane	ND		200	57	ug/L			05/21/14 22:17	1
Ethylbenzene	ND		1.0	0.16	ug/L			05/21/14 22:17	1
2-Hexanone	ND		5.0	1.7	ug/L			05/21/14 22:17	1
Isopropylbenzene	ND		1.0	0.19	ug/L			05/21/14 22:17	1
Methyl acetate	ND		5.0	1.6	ug/L			05/21/14 22:17	1
Methylcyclohexane	ND		1.0	0.36	ug/L			05/21/14 22:17	1
Methylene Chloride	ND		2.0	0.32	ug/L			05/21/14 22:17	1
4-Methyl-2-pentanone (MIBK)	ND		5.0	0.98	ug/L			05/21/14 22:17	1
Methyl tert-butyl ether	ND		5.0	0.25	ug/L			05/21/14 22:17	1
m-Xylene & p-Xylene	ND		2.0	0.34	ug/L			05/21/14 22:17	1
o-Xylene	ND		1.0	0.19	ug/L			05/21/14 22:17	1
Styrene	ND		1.0	0.17	ug/L			05/21/14 22:17	1
1,1,2,2-Tetrachloroethane	ND		1.0	0.21	ug/L			05/21/14 22:17	1
Tetrachloroethene	ND		1.0	0.20	ug/L			05/21/14 22:17	1
Toluene	ND		1.0	0.17	ug/L			05/21/14 22:17	1
trans-1,2-Dichloroethene	ND		1.0	0.15	ug/L			05/21/14 22:17	1
trans-1,3-Dichloropropene	ND		3.0	0.19	ug/L			05/21/14 22:17	1
1,2,3-Trichlorobenzene	ND		1.0	0.21	ug/L			05/21/14 22:17	1
1,2,4-Trichlorobenzene	ND		1.0	0.21	ug/L			05/21/14 22:17	1
1,1,1-Trichloroethane	ND		1.0	0.16	ug/L			05/21/14 22:17	1
1,1,2-Trichloroethane	ND		1.0	0.27	ug/L			05/21/14 22:17	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 280-226895/5
Matrix: Water
Analysis Batch: 226895

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	ND		1.0	0.16	ug/L			05/21/14 22:17	1
Trichlorofluoromethane	ND		2.0	0.29	ug/L			05/21/14 22:17	1
1,1,2-Trichlorotrifluoroethane	ND		3.0	0.42	ug/L			05/21/14 22:17	1
Vinyl chloride	ND		1.0	0.10	ug/L			05/21/14 22:17	1
Xylenes, (Total)	ND		2.2	0.39	ug/L			05/21/14 22:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*78 - 120*		*05/21/14 22:17*	*1*
Dibromofluoromethane (Surr)	*103*		*77 - 120*		*05/21/14 22:17*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 127*		*05/21/14 22:17*	*1*
Toluene-d8 (Surr)	*110*		*80 - 125*		*05/21/14 22:17*	*1*

Lab Sample ID: LCS 280-226895/4
Matrix: Water
Analysis Batch: 226895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	18.8		ug/L		94	50 - 156
Benzene	5.00	4.27		ug/L		85	74 - 135
Bromoform	5.00	4.12		ug/L		82	62 - 135
Bromomethane	5.00	4.17		ug/L		83	38 - 150
2-Butanone (MEK)	20.0	21.8		ug/L		109	44 - 150
Carbon disulfide	5.00	4.24		ug/L		85	34 - 150
Carbon tetrachloride	5.00	4.44		ug/L		89	67 - 135
Chlorobenzene	5.00	4.57		ug/L		91	76 - 135
Chlorobromomethane	5.00	4.19		ug/L		84	70 - 135
Chlorodibromomethane	5.00	4.43		ug/L		89	68 - 135
Chloroethane	5.00	4.20		ug/L		84	46 - 147
Chloroform	5.00	4.35		ug/L		87	76 - 120
Chloromethane	5.00	4.13		ug/L		83	34 - 145
cis-1,2-Dichloroethene	5.00	4.26		ug/L		85	73 - 135
cis-1,3-Dichloropropene	5.00	4.60		ug/L		92	66 - 135
1,2-Dibromo-3-Chloropropane	5.00	3.92	J	ug/L		78	65 - 150
1,2-Dibromoethane	5.00	4.43		ug/L		89	71 - 135
1,2-Dichlorobenzene	5.00	4.60		ug/L		92	75 - 135
1,3-Dichlorobenzene	5.00	4.59		ug/L		92	74 - 135
1,4-Dichlorobenzene	5.00	4.65		ug/L		93	75 - 135
Dichlorobromomethane	5.00	4.18		ug/L		84	73 - 135
Dichlorodifluoromethane	5.00	4.42		ug/L		88	28 - 152
1,1-Dichloroethane	5.00	4.40		ug/L		88	75 - 135
1,2-Dichloroethane	5.00	4.44		ug/L		89	70 - 135
1,1-Dichloroethene	5.00	4.07		ug/L		81	71 - 136
1,2-Dichloropropane	5.00	4.27		ug/L		85	71 - 120
Ethylbenzene	5.00	4.52		ug/L		90	72 - 120
2-Hexanone	20.0	19.8		ug/L		99	47 - 150
Isopropylbenzene	5.00	4.46		ug/L		89	75 - 135
Methylene Chloride	5.00	4.13		ug/L		83	54 - 141
4-Methyl-2-pentanone (MIBK)	20.0	19.0		ug/L		95	53 - 150

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 280-226895/4
Matrix: Water
Analysis Batch: 226895

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	5.00	4.15	J	ug/L		83	46 - 135
m-Xylene & p-Xylene	5.00	4.54		ug/L		91	74 - 135
o-Xylene	5.00	4.61		ug/L		92	73 - 135
Styrene	5.00	4.61		ug/L		92	68 - 135
1,1,2,2-Tetrachloroethane	5.00	4.43		ug/L		89	66 - 135
Tetrachloroethene	5.00	4.47		ug/L		89	70 - 135
Toluene	5.00	4.37		ug/L		87	73 - 120
trans-1,2-Dichloroethene	5.00	4.29		ug/L		86	75 - 135
trans-1,3-Dichloropropene	5.00	4.27		ug/L		85	68 - 135
1,2,3-Trichlorobenzene	5.00	4.29		ug/L		86	60 - 135
1,2,4-Trichlorobenzene	5.00	4.46		ug/L		89	64 - 135
1,1,1-Trichloroethane	5.00	4.36		ug/L		87	70 - 135
1,1,2-Trichloroethane	5.00	4.24		ug/L		85	73 - 135
Trichloroethene	5.00	4.29		ug/L		86	73 - 135
Trichlorofluoromethane	5.00	4.19		ug/L		84	47 - 150
Vinyl chloride	5.00	4.31		ug/L		86	40 - 144

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*78 - 120*
Dibromofluoromethane (Surr)	*88*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*90*		*70 - 127*
Toluene-d8 (Surr)	*94*		*80 - 125*

Lab Chronicle

Client: Terracon Consulting Eng & Scientists
Project/Site: 25147007 - Perry II

TestAmerica Job ID: 280-55421-1

Client Sample ID: P2-MW01

Lab Sample ID: 280-55421-1

Date Collected: 05/14/14 09:40
Matrix: Water
Date Received: 05/14/14 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	226895	05/22/14 06:42	JNL	TAL DEN

Client Sample ID: P2-MWREPLICATE

Lab Sample ID: 280-55421-2

Date Collected: 05/14/14 10:00
Matrix: Water
Date Received: 05/14/14 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	226895	05/22/14 07:01	JNL	TAL DEN

Client Sample ID: P2-RINSATE

Lab Sample ID: 280-55421-3

Date Collected: 05/14/14 10:05
Matrix: Water
Date Received: 05/14/14 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	226895	05/22/14 07:21	JNL	TAL DEN

Client Sample ID: TRIP BLANK

Lab Sample ID: 280-55421-4

Date Collected: 05/14/14 00:00
Matrix: Water
Date Received: 05/14/14 15:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	20 mL	20 mL	226691	05/21/14 16:46	MD	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Login Sample Receipt Checklist

Client: Terracon Consulting Eng & Scientists

Job Number: 280-55421-1

Login Number: 55421

List Source: TestAmerica Denver

List Number: 1

Creator: O'Tormey, Stephanie R

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Chain of Custody R

280-55421 Chain of Custody

TAL-4124-280 (0508)

Sampler ID MAS

Temperature on Receipt 2.0+0.5 IR-4 5/14/14 10

Drinking Water? Yes ☐ No ☒

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client	Project Manager	Date	Chain of Custody Number
Terracon	John Dellaport	5/14/14	184969
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
10625 W. I-70 Frontage Rd N Ste 3	303-423-3300		
City / State / Zip Code	**Site Contact**	**Lab Contact**	
Wheat Ridge / CO / 80033	M. Stewart		
Project Name and Location (State)	**Carrier/Waybill Number**		
Perry II CO			
Contract/Purchase Order/Quote No.			
25147007			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	Analysis: VOCs (8260B)	Special Instructions/ Conditions of Receipt
P2-MW01	5/14/14	0940		X						X			X	
P2-MW Replicate	↓	1000		X						X			X	
P2-RINSATE		1005		X						X			X	
Trip Blank				X						X			X	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☒ Other Standard

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Meredith Steward	5/14/14	1550	1. Received By:	5/14/14	1550
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

5/23/2014

APPENDIX D3

ESC LABORATORY REPORT FOR SAMPLES COLLECTED ON MAY 15, 2014

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

John C Dellaport
Terracon - CO
10625 W 1-70 Frontage Rd N
Denver, CO 80033

Report Summary

Wednesday May 21, 2014

Report Number: L699465
Samples Received: 05/16/14
Client Project: 25147007

Description: Perry II Brownfields Investigation

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By: Daphne R Richards

Daphne Richards , ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 100789, AL - 40660, CA - 01157CA, CT - PH-0197, FL - E87487, GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375/DW21704/BIO041, ND - R-140. NJ - TN002, NJ NELAP - TN002, SC - 84004, TN - 2006, VA - 460132, WV - 233, AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910, NV - TN000032011-1, TX - T104704245-11-3, OK - 9915, PA - 68-02979, IA Lab #364, EPA - TN002

Accreditation is only applicable to the test methods specified on each scope of accreditation held by ESC Lab Sciences.

Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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REPORT OF ANALYSIS

John C Dellaport
Terracon - CO
10625 W 1-70 Frontage Rd N
Denver, CO 80033

May 21, 2014

ESC Sample # : L699465-01

Site ID :

Project # : 25147007

Date Received : May 16, 2014
Description : Perry II Brownfields Investigation

Sample ID : P2-SS01 (0.5)

Collected By : M. Skridulis
Collection Date : 05/15/14 11:36

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics - TO-15 SIM									
Benzene	71-43-2	78.1	0.020	0.064	0.10	0.32	TO-15	05/20/14	1
Carbon tetrachloride	56-23-5	154	0.020	0.13	0.060	0.38	TO-15	05/20/14	1
Chloroform	67-66-3	119	0.020	0.097	< 0.020	< 0.097	TO-15	05/20/14	1
1,4-Dichlorobenzene	106-46-7	147	0.020	0.12	< 0.020	< 0.12	TO-15	05/20/14	1
1,1-Dichloroethane	75-34-3	98	0.020	0.080	< 0.020	< 0.080	TO-15	05/20/14	1
1,1-Dichloroethene	75-35-4	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	05/20/14	1
1,2-Dichloropropane	78-87-5	113	0.030	0.14	< 0.030	< 0.14	TO-15	05/20/14	1
Ethylbenzene	100-41-4	106	0.030	0.13	0.38	1.6	TO-15	05/20/14	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.020	0.14	< 0.020	< 0.14	TO-15	05/20/14	1
Tetrachloroethylene	127-18-4	166	0.020	0.14	0.047	0.32	TO-15	05/20/14	1
1,1,1-Trichloroethane	71-55-6	133	0.020	0.11	< 0.020	< 0.11	TO-15	05/20/14	1
1,1,2-Trichloroethane	79-00-5	133	0.030	0.16	< 0.030	< 0.16	TO-15	05/20/14	1
Trichloroethylene	79-01-6	131	0.020	0.11	< 0.020	< 0.11	TO-15	05/20/14	1
Vinyl chloride	75-01-4	62.5	0.020	0.051	< 0.020	< 0.051	TO-15	05/20/14	1
1,4-Bromofluorobenzene	460-00-4				97	% Rec.	TO-15	05/20/14	1

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.

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Reported: 05/21/14 09:49 Printed: 05/21/14 10:26

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REPORT OF ANALYSIS

John C Dellaport
Terracon - CO
10625 W 1-70 Frontage Rd N
Denver, CO 80033

May 21, 2014

ESC Sample # : L699465-02

Site ID :

Project # : 25147007

Date Received : May 16, 2014
Description : Perry II Brownfields Investigation

Sample ID : P2-SS REPLICATE

Collected By : M. Skridulis
Collection Date : 05/15/14 12:50

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics - TO-15 SIM									
Benzene	71-43-2	78.1	0.020	0.064	0.057	0.18	TO-15	05/20/14	1
Carbon tetrachloride	56-23-5	154	0.020	0.13	0.056	0.35	TO-15	05/20/14	1
Chloroform	67-66-3	119	0.020	0.097	< 0.020	< 0.097	TO-15	05/20/14	1
1,4-Dichlorobenzene	106-46-7	147	0.020	0.12	< 0.020	< 0.12	TO-15	05/20/14	1
1,1-Dichloroethane	75-34-3	98	0.020	0.080	< 0.020	< 0.080	TO-15	05/20/14	1
1,1-Dichloroethene	75-35-4	96.9	0.020	0.079	< 0.020	< 0.079	TO-15	05/20/14	1
1,2-Dichloropropane	78-87-5	113	0.030	0.14	< 0.030	< 0.14	TO-15	05/20/14	1
Ethylbenzene	100-41-4	106	0.030	0.13	0.19	0.82	TO-15	05/20/14	1
1,1,2,2-Tetrachloroethane	79-34-5	168	0.020	0.14	< 0.020	< 0.14	TO-15	05/20/14	1
Tetrachloroethylene	127-18-4	166	0.020	0.14	0.040	0.27	TO-15	05/20/14	1
1,1,1-Trichloroethane	71-55-6	133	0.020	0.11	< 0.020	< 0.11	TO-15	05/20/14	1
1,1,2-Trichloroethane	79-00-5	133	0.030	0.16	< 0.030	< 0.16	TO-15	05/20/14	1
Trichloroethylene	79-01-6	131	0.020	0.11	< 0.020	< 0.11	TO-15	05/20/14	1
Vinyl chloride	75-01-4	62.5	0.020	0.051	< 0.020	< 0.051	TO-15	05/20/14	1
1,4-Bromofluorobenzene	460-00-4				96.2	% Rec.	TO-15	05/20/14	1

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.

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Reported: 05/21/14 09:49 Printed: 05/21/14 10:26

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REPORT OF ANALYSIS

John C Dellaport
Terracon - CO
10625 W 1-70 Frontage Rd N
Denver, CO 80033

May 21, 2014

ESC Sample # : L699465-03

Site ID :

Project # : 25147007

Date Received : May 16, 2014
Description : Perry II Brownfields Investigation

Sample ID : P2-SS01 (0.5)

Collected By : M. Skridulis
Collection Date : 05/15/14 12:12

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	TO-15	05/18/14	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	TO-15	05/18/14	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	TO-15	05/18/14	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	0.70	2.4	TO-15	05/18/14	1
Styrene	100-42-5	104	0.200	0.850	< 0.20	< 0.85	TO-15	05/18/14	1
Toluene	108-88-3	92.1	0.200	0.750	0.84	3.2	TO-15	05/18/14	1
m&p-Xylene	1330-20-7	106	0.400	1.70	0.82	3.6	TO-15	05/18/14	1
o-Xylene	95-47-6	106	0.200	0.870	0.33	1.4	TO-15	05/18/14	1
1,4-Bromofluorobenzene	460-00-4				97.4	% Rec.	TO-15	05/18/14	1

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.

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Reported: 05/21/14 09:49 Printed: 05/21/14 10:26

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REPORT OF ANALYSIS

John C Dellaport
Terracon - CO
10625 W 1-70 Frontage Rd N
Denver, CO 80033

May 21, 2014

ESC Sample # : L699465-04

Site ID :

Project # : 25147007

Date Received : May 16, 2014
Description : Perry II Brownfields Investigation

Sample ID : P2-SS REPLICATE

Collected By : M. Skridulis
Collection Date : 05/15/14 13:25

Parameter	Cas#	Mol Wght	RDL1	RDL2	ppbv	ug/m3	Method	Date	Dil.
Volatile Organics									
Chlorobenzene	108-90-7	113	0.200	0.920	< 0.20	< 0.92	TO-15	05/18/14	1
1,2-Dichlorobenzene	95-50-1	147	0.200	1.20	< 0.20	< 1.2	TO-15	05/18/14	1
1,2-Dichloroethane	107-06-2	99	0.200	0.810	< 0.20	< 0.81	TO-15	05/18/14	1
Methylene Chloride	75-09-2	84.9	0.200	0.690	< 0.20	< 0.69	TO-15	05/18/14	1
Styrene	100-42-5	104	0.200	0.850	< 0.20	< 0.85	TO-15	05/18/14	1
Toluene	108-88-3	92.1	0.200	0.750	0.66	2.5	TO-15	05/18/14	1
m&p-Xylene	1330-20-7	106	0.400	1.70	0.64	2.8	TO-15	05/18/14	1
o-Xylene	95-47-6	106	0.200	0.870	0.26	1.1	TO-15	05/18/14	1
1,4-Bromofluorobenzene	460-00-4				101	% Rec.	TO-15	05/18/14	1

RDL1 = ppbv , RDL2 = ug/m3
Note:
Units are based on (STP) - Standard Temperature and Pressure
The reported analytical results relate only to the sample submitted.

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Reported: 05/21/14 09:49 Printed: 05/21/14 10:26

Summary of Remarks For Samples Printed
05/21/14 at 10:26:33

TSR Signing Reports: 288

QC2MODCN USE SAP LIST for ALL BROWNFIELD PROJECTS

Sample: L699465-01 Account: TERRADCO Received: 05/16/14 10:00 Due Date: 05/23/14 00:00 RPT Date: 05/21/14 09:49
SIM, sampling train FedEx Std
Sample: L699465-02 Account: TERRADCO Received: 05/16/14 10:00 Due Date: 05/23/14 00:00 RPT Date: 05/21/14 09:49
SIM, sampling train
Sample: L699465-03 Account: TERRADCO Received: 05/16/14 10:00 Due Date: 05/23/14 00:00 RPT Date: 05/21/14 09:49
sampling train
Sample: L699465-04 Account: TERRADCO Received: 05/16/14 10:00 Due Date: 05/23/14 00:00 RPT Date: 05/21/14 09:49
sampling train

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Est. 1970

Terracon - CO
John C Dellaport
10625 W 1-70 Frontage Rd N
Denver, CO 80033

Quality Assurance Report
Level II

L699465

May 30, 2014

Laboratory Blank

Analyte	Result	Units	% Rec	Limit	Batch	Date Analyzed
1,2-Dichlorobenzene	< .2	ppb			WG721568	05/17/14 18:17
1,2-Dichloroethane	< .2	ppb			WG721568	05/17/14 18:17
Chlorobenzene	< .2	ppb			WG721568	05/17/14 18:17
m&p-Xylene	< .4	ppb			WG721568	05/17/14 18:17
Methylene Chloride	< .2	ppb			WG721568	05/17/14 18:17
o-Xylene	< .2	ppb			WG721568	05/17/14 18:17
Styrene	< .2	ppb			WG721568	05/17/14 18:17
Toluene	< .2	ppb			WG721568	05/17/14 18:17
1,4-Bromofluorobenzene		% Rec.	96.10	60-140	WG721568	05/17/14 18:17
1,1,1-Trichloroethane	< .02	ppb			WG721853	05/20/14 03:31
1,1,2,2-Tetrachloroethane	< .02	ppb			WG721853	05/20/14 03:31
1,1,2-Trichloroethane	< .03	ppb			WG721853	05/20/14 03:31
1,1-Dichloroethane	< .02	ppb			WG721853	05/20/14 03:31
1,1-Dichloroethene	< .02	ppb			WG721853	05/20/14 03:31
1,2-Dichloropropane	< .03	ppb			WG721853	05/20/14 03:31
1,4-Dichlorobenzene	< .02	ppb			WG721853	05/20/14 03:31
Benzene	< .02	ppb			WG721853	05/20/14 03:31
Carbon tetrachloride	< .02	ppb			WG721853	05/20/14 03:31
Chloroform	< .02	ppb			WG721853	05/20/14 03:31
Ethylbenzene	< .03	ppb			WG721853	05/20/14 03:31
Tetrachloroethylene	< .02	ppb			WG721853	05/20/14 03:31
Trichloroethylene	< .02	ppb			WG721853	05/20/14 03:31
Vinyl chloride	< .02	ppb			WG721853	05/20/14 03:31
1,4-Bromofluorobenzene		% Rec.	98.60	60-140	WG721853	05/20/14 03:31

Laboratory Control Sample

Analyte	Units	Known Val	Result	% Rec	Limit	Batch
1,2-Dichlorobenzene	ppb	3.75	3.98	106.	70-130	WG721568
1,2-Dichloroethane	ppb	3.75	3.98	106.	70-130	WG721568
Chlorobenzene	ppb	3.75	3.87	103.	70-130	WG721568
m&p-Xylene	ppb	7.5	8.12	108.	70-130	WG721568
Methylene Chloride	ppb	3.75	3.78	101.	70-130	WG721568
o-Xylene	ppb	3.75	4.13	110.	70-130	WG721568
Styrene	ppb	3.75	4.23	113.	70-130	WG721568
Toluene	ppb	3.75	3.94	105.	70-130	WG721568
1,4-Bromofluorobenzene				96.90	60-140	WG721568
1,1,1-Trichloroethane	ppb	.5	0.438	87.6	70-130	WG721853
1,1,2,2-Tetrachloroethane	ppb	.5	0.454	90.9	70-130	WG721853
1,1,2-Trichloroethane	ppb	.5	0.461	92.2	70-130	WG721853
1,1-Dichloroethane	ppb	.5	0.444	88.8	70-130	WG721853
1,1-Dichloroethene	ppb	.5	0.427	85.5	70-130	WG721853
1,2-Dichloropropane	ppb	.5	0.462	92.4	70-130	WG721853
1,4-Dichlorobenzene	ppb	.5	0.453	90.6	70-130	WG721853
Benzene	ppb	.5	0.448	89.7	70-130	WG721853
Carbon tetrachloride	ppb	.5	0.440	88.0	70-130	WG721853
Chloroform	ppb	.5	0.442	88.5	70-130	WG721853
Ethylbenzene	ppb	.5	0.498	99.5	70-130	WG721853
Tetrachloroethylene	ppb	.5	0.447	89.4	70-130	WG721853
Trichloroethylene	ppb	.5	0.438	87.6	70-130	WG721853
Vinyl chloride	ppb	.5	0.415	82.9	70-130	WG721853
1,4-Bromofluorobenzene				95.60	60-140	WG721853

* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Est. 1970

Terracon - CO
John C Dellaport
10625 W 1-70 Frontage Rd N

Denver, CO 80033

Quality Assurance Report
Level II

L699465

May 30, 2014

Analyte	Units	Laboratory Control Sample Result	Ref	%Rec	Limit	Duplicate RPD	Limit	Batch
1,2-Dichlorobenzene	ppb	4.02	3.98	107.	70-130	0.870	25	WG721568
1,2-Dichloroethane	ppb	4.14	3.98	110.	70-130	3.92	25	WG721568
Chlorobenzene	ppb	4.03	3.87	107.	70-130	4.06	25	WG721568
m&p-Xylene	ppb	8.08	8.12	108.	70-130	0.470	25	WG721568
Methylene Chloride	ppb	3.89	3.78	104.	70-130	2.99	25	WG721568
o-Xylene	ppb	4.08	4.13	109.	70-130	1.24	25	WG721568
Styrene	ppb	4.19	4.23	112.	70-130	1.05	25	WG721568
Toluene	ppb	4.06	3.94	108.	70-130	3.01	25	WG721568
1,4-Bromofluorobenzene				100.0	60-140			WG721568
1,1,1-Trichloroethane	ppb	0.446	0.438	89.0	70-130	1.85	25	WG721853
1,1,2,2-Tetrachloroethane	ppb	0.459	0.454	92.0	70-130	0.920	25	WG721853
1,1,2-Trichloroethane	ppb	0.469	0.461	94.0	70-130	1.72	25	WG721853
1,1-Dichloroethane	ppb	0.450	0.444	90.0	70-130	1.30	25	WG721853
1,1-Dichloroethene	ppb	0.433	0.427	86.0	70-130	1.24	25	WG721853
1,2-Dichloropropane	ppb	0.470	0.462	94.0	70-130	1.74	25	WG721853
1,4-Dichlorobenzene	ppb	0.451	0.453	90.0	70-130	0.520	25	WG721853
Benzene	ppb	0.454	0.448	91.0	70-130	1.24	25	WG721853
Carbon tetrachloride	ppb	0.447	0.440	89.0	70-130	1.51	25	WG721853
Chloroform	ppb	0.450	0.442	90.0	70-130	1.67	25	WG721853
Ethylbenzene	ppb	0.503	0.498	100.	70-130	1.02	25	WG721853
Tetrachloroethylene	ppb	0.451	0.447	90.0	70-130	0.830	25	WG721853
Trichloroethylene	ppb	0.442	0.438	88.0	70-130	0.910	25	WG721853
Vinyl chloride	ppb	0.420	0.415	84.0	70-130	1.30	25	WG721853
1,4-Bromofluorobenzene				95.10	60-140			WG721853

Batch number /Run number / Sample number cross reference

WG721568: R2923591: L699465-03 04
WG721853: R2925308: L699465-01 02

* * Calculations are performed prior to rounding of reported values.
* Performance of this Analyte is outside of established criteria.
For additional information, please see Attachment A 'List of Analytes with QC Qualifiers.'

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Quality Assurance Report
Level II

L699465

May 30, 2014

The data package includes a summary of the analytic results of the quality control samples required by the SW-846 or CWA methods. The quality control samples include a method blank, a laboratory control sample, and the matrix spike/matrix spike duplicate analysis. If a target parameter is outside the method limits, every sample that is effected is flagged with the appropriate qualifier in Appendix B of the analytic report.

Method Blank - an aliquot of reagent water carried through the entire analytic process. The method blank results indicate if any possible contamination exposure during the sample handling, digestion or extraction process, and analysis. Concentrations of target analytes above the reporting limit in the method blank are qualified with the "B" qualifier.

Laboratory Control Sample - is a sample of known concentration that is carried through the digestion/extraction and analysis process. The percent recovery, expressed as a percentage of the theoretical concentration, has statistical control limits indicating that the analytic process is "in control". If a target analyte is outside the control limits for the laboratory control sample or any other control sample, the parameter is flagged with a "J4" qualifier for all effected samples.

Matrix Spike and Matrix Spike Duplicate - is two aliquots of an environmental sample that is spiked with known concentrations of target analytes. The percent recovery of the target analytes also has statistical control limits. If any recoveries that are outside the method control limits, the sample that was selected for matrix spike/matrix spike duplicate analysis is flagged with either a "J5" or a "J6". The relative percent difference (%RPD) between the matrix spike and the matrix spike duplicate recoveries is all calculated. If the RPD is above the method limit, the effected samples are flagged with a "J3" qualifier.